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ROYAL UNITED SERVICE INSTITUTION.

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[*Authors alone are responsible for the contents of their respective Papers.*]

SECRETARY'S NOTES.

1. The following officers joined the Institution during the month of July:—

Lieutenant J. H. Wardell, 5th Battalion The Rifle Brigade.
Captain H. St. J. Cruickshank, R.A.
Colonel W. E. Peyton, D.S.O., 15th Hussars.
Captain K. Wigram, Indian Army.
Second Lieutenant G. E. Longstaff, 2nd V.B. East Surrey Regiment.
Colonel A. H. Courtenay, C.B., 4th Battalion Scottish Rifles.
Major P. G. Godfrey-Faussett, R.F.A.
Second Lieutenant H. J. M. P. Pope-Hennessy, 3rd Battalion Oxfordshire Light Infantry.
Lieutenant C. H. Jones, R.N.
Lieutenant M. E. Makgill-Crichton-Maitland, Grenadier Guards.
Major T. Fraser, R.E.
Paymaster H. R. Russell, R.N.
Second Lieutenant Sir F. L. F. Fitzwygram, Bart., Scots Guards.

(No officer of the Royal Naval Reserve or Imperial Yeomanry joined the Institution during the month.)

2. The new building will be closed for cleaning purposes from Monday, 20th August, till Saturday, 1st September (inclusive). The Museum will be open as usual.

3. The Council have arranged for a course of Military History Lectures, on the subjects set for the November Promotion Examinations, to be delivered by Dr. Miller Maguire in the Theatre of the Institution at 4 p.m. on the following dates:—

October—9th, 12th, 16th, 19th, 23rd, 26th, 30th.
November—2nd, 6th, 9th.

The fee for the course will be £1 for members of the Institution, and £2 for non-members.

The Council, in conjunction with the General Officer Commanding the London District, are also arranging for a similar course of lectures to be delivered on the same dates at 6.30 p.m. for officers of the Auxiliary Forces who are unable to attend the afternoon course.

Special campaigns, etc., selected for the examinations :—

*First Paper :—General Questions on the Peninsular Campaign, from March, 1811, to the end of October, 1813.

*Second Paper :—Salamanca, 1812, from the surprise of Almaraz in May, to the occupation of Madrid in August.

Was also set in May, 1906.

*First Paper :—General Questions on the Peninsular Campaign, from March, 1811, to the end of October, 1813.

*Second Paper :—Special Campaign—Vittoria, 1813, from May to the end of June, 1813.

Campaign set for the first time.

4. Officers, when communicating officially with the Institution, are requested to sign their names with their rank, as there are several instances of officers bearing the same name and initials.

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*No detailed questions will be set with reference to the action of the Spanish and Portuguese Armies, and no question of any kind will be set with reference to these armies when their action had no bearing on that of the British troops.

PUBLIC SCHOOL EDUCATION AS AFFECTING THE TRAINING OF CANDIDATES FOR THE IMPERIAL SERVICES.

By the Rev. F. W. TRACY, Head-Master "United Services College."

Thursday, 29th March, 1906.

Major-General H. D. HUTCHINSON, C.S.I. (Director of Staff Duties), in the Chair.

THE ROYAL NAVY.

THE Senior Service has definitely abandoned all attempt at drawing its material from the public schools. Only in the few cases where Cadets enter Osborne from the Preparatory Department of a Public School have candidates for the Navy any direct touch with Public School life.

How far their early association with public school ideas may have any permanent effect on them is scarcely a matter for practical consideration. One thing only is sure, namely, that the higher the Public School standard, the higher will be that of the Preparatory School.

The new system of combining a good general education with professional training, right on from the age of Public School entry, seems at present to indicate but one serious problem. I refer to the question of obtaining sufficiently high specialised power for individual branches, from an education conducted so far on a common basis. And it may, perhaps, be questioned to what extent the absorbing demand on the directly observant and receptive powers of very young boys may operate against the growth of the reflective and imaginative faculties, without which neither tactics nor strategy can reach their highest development.

But I venture the very strong opinion that not only will a very high average of general quality result, but that development of individual ability will be found in a ratio hitherto unknown to English education.

THE CIVIL SERVICES.

In regard to the Civil Services it only seems necessary to say that whatever in Public School training affects, whether favourably or adversely, the material of the Combatant Services must very largely have

similar effect upon the Civil. An education, for instance, which sends to the Army youngsters possessed of an inveterate habit of industry will operate usefully upon the Civil Service candidate. Civil Service work abroad, indeed, is often of the most intensely trying character, and the utmost that can be done during boyhood towards equipping the Civil Servant for the most arduous tests is a matter of bare justice, not to say Imperial common-sense.

The Army.

What does the Service require?

I will not attempt to deal with the specialised needs of one branch as compared with another, but will only advance some suggestions on what, to a layman, appear to be amongst the chief qualifications to be desired in all officers. Granted that these be not advanced in error, I would urge that definite recognition of them from the earliest educational stage would be good for all citizens, would, by its general influence on Public School life, ultimately improve our Administrative, and would give the best available material from which to draw officers for the Army.

The underlying principles of war may be the same in all ages, but the conditions of modern warfare appear more and more exacting, both of ability and staying power, whilst the consequences of an error appear more likely to be irretrievable. In the circumstances, the question is not: What constitutes a good officer, and how can he be obtained? but: What is the best of the best? and how can the Army be supplied with it?

Active Service in the older days had little of complexity, and often but scanty room for reasoned tactics.

Sheer physical courage, a quick eye for opportunity, and the power of inspiring confidence amongst his men, were, perhaps, some of the chief characteristics of a successful regimental officer.

More than that is needed now. The fiery excitement of combat at close quarters must be the exception, and the strain on all the powers of physical, moral and intellectual endurance, entailed by wide fields of action, long-range weapons, and a foe but seldom visible, must be the rule of any serious campaign.

Modern warfare calls for nerve, for fine temper, great power of endurance, a devotion to duty—not merely earnest, but intelligent—a cultivated observation, and a reasoning power responding in appropriate action to the call of circumstances.

"Men of utility" (I quote the words of a practical educationalist of long experience), "nimble-minded men, men who can grasp principles at a glance, and notice details as second nature, men who have been trained in early life to deduce cause from effect, these are the stamp of men required—the men who can do the right thing at the right moment, who can snatch an opportunity without a second's hesitation." The writer goes on to urge that "there is one lesson which the late Boer War made very apparent, and it is that the ordinary Boer officer was a man better educated for his work than the Britisher. He had been reared in a different school. He may have been inferior in book learning, but the Boer had been trained in Nature's school, where trifles are never overlooked. In observation and deductive reasoning there was no comparison."

To say this is not to blame the individual officer. He was what his training and opportunities made him. It was not his fault that the only school in which he might have learnt—the school of Indian Frontier work—was, in the main, beyond his reach, and that so little of realism, so much of social show attended the life of an average British regiment. What had there been in his boyhood's training to inspire that "curiosity of knowledge" which is the foundation of mental ability, that passion for thoroughness which is content with no half-way houses of attainment?

The Report of the recent Committee on the "Education and Training of Officers of the Army" has resulted in a radical re-adjustment of the antecedent training so far as bookwork is concerned. I believe this re-adjustment makes for good, especially as it calls for some degree of sustained industry from a comparatively early stage.

The selection and treatment of bookwork subjects I purposely avoid discussing. I am anxious to speak of qualities rather than precise learning; of education rather than instruction. It may be said that such qualities and characteristics as have been indicated are largely a matter of temperament. I urge most strongly that the qualities of a man are largely a matter of training, far more largely than is recognised in practice, and that the attainment of a high common standard would bring special aptitudes also to a still higher point.

I venture to regret that the Committee did not deal with this question—and to press its extreme importance.

Quoting from one of the most brilliant of recent utterances on the subject of education ("On Professional Education," by Dr. Clifford Allbutt): "Education, as contrasted with instruction, is a drawing forth of faculties, a quickening, enlarging, and refining of them when brought out, and an establishment of them in habits; so that virtue and reason become easy and pleasant to us. The word is used of mind rather than of morals or of the powers of the body; but by mind we signify both intellect and imagination, and their issue in right action. . . . Education, then, is not the formation of a rigid framework, but of a capacity for ideas and for various and supple adaptations."

The speaker goes on to say: "The problem of education in modern England is that of general schooling, of ascertaining the modes which shall prove most valuable to put each person, during his youth, in touch with the sum of conditions under which he is to lead the best life possible to him; this done, he may the more efficiently be adapted to specific or personal functions. . . . The importance of a universal training of the instrument of mind, before the adaptation of it to special engagements, will be better understood when we realise that truth is neither wholly without us nor wholly within us, but is a function of fact and temperament. Now temperament is partly native, but largely also the creature of habit, and habits—such as the habit of virtue and of comprehensive and precise thinking—are the creatures of education, and especially of education in the plastic years of life.

"Thus the man whose mind has been built up on universal lines, whatsoever his calling, is enabled to free himself from the conventions and temporary notions of the mere 'practical man,' to distinguish the important from the unimportant truths, and to drop swiftly upon

cardinal features—upon the facts which matter." ("On Professional Education," Allbutt, pp. 2, 3, 4, 5.)

If the Army is in days to come to be handled by the best of the best, these principles need to be recognised in practical fashion. It is unwise to assume that their recognition in the handling of book-work, even when the utmost is allowed for consequent increase of industry, is any guarantee for the advance of education in the wider sense. Nor does inspection secure any definite advance.

The Public School Boy. His Strong Points—His Defects.

Yet again to quote Dr. Clifford Allbutt:—

"From our Public Schools our young men derive many fine qualities. As Herodotus says of the Persian youths, they are taught to ride and to speak the truth; and, indeed, when our country loses its manliness and its veracity, it will lose all things. But these fine qualities do not meet the sum of conditions under which the Englishman has to live; he has to do more than to speak and to act with spirit and uprightness, and to read the sporting papers with intelligence. If he is to be equal to the conflict of modern life he must be able to reason, both on man and on nature, to measure his own capacities, to read the hearts and habits of men, and to foresee the trend of natural laws. For these ends, besides energy and will, he must have a curiosity for knowledge, some intellectual seriousness and flexibility, some endurance of attention, some self-possession, and some ideas; qualities eminently in defect in the average products of our Public Schools."

The best of Public School boys—and they are not few—deserve all that can be said of their essential manliness. I frankly believe them to be the best material in the world. Their defects are, in the main and on the average, the defects of an education lacking in breadth and in practical recognition of certain vital issues.

Public School boys, on the average, acquire neither method nor the habit of strenuous work. There is a great outcry about the cult of athleticism, but there are many, many boys whose athletic training is of the poorest, and this is largely the reason of the excessive glorification of competent athletes. One might say more, but the long and short of it is that many a Public School boy has a great deal of time "cut to waste," is insufficiently guided to a practical outlook on life, and is, in fact, apt to pass through school with a minimum of the training which he individually needs, and which some happier school fellows receive in good measure.

Learning is to him either a thing abhorrent or of a value strictly commensurate with its negociability in marks. His patriotism is vague. He is ready enough to die for his country, but has little idea of how to live for her. He is crude and undeveloped to a degree, and is honestly unaware of it. His individual needs have not been fairly met. As a man he shows lack of individuality and poverty of resource.

This is no matter of isolated personal opinion. One might quote from multitudinous utterances, both in the daily Press and in more permanent literature.

Recently, for instance, there appeared in the *Lancaster Guardian* a thoughtful comparison between English and American Public Schools. From it, as representative, I take some extracts:—

"There is something lacking, or something in our national life which somehow takes the alertness, enthusiasm, and originality out of a large percentage of the professional and commercial class. Conversely, there is something in American life which stimulates individuality and independence. The stimulating force in American life we take to be the 'Public Schools,' which correspond roughly to our National Schools. The retarding force in England is, in our judgment, the 'Public Schools.'

"To an American the typical Englishman—the man who is caricatured on the stage—is the man who, in England, gains a sort of reflected lustre from his school or college without shedding lustre on either himself. We are all familiar with the type. He walks abroad with the idea that there are two sorts of people in the world—Public Schoolmen and non-Public Schoolmen. . . .

"No one will deny that the products of our Public Schools are gentlemen and athletes—but are nothing else as a rule:—

"Of gods thou shalt have only two:
"Thy goddess 'Form'—Thy god the 'Blue,'

as a witty Oxonian put it, is the creed of four-fifths of the youths who have what is called the Public School spirit.

"Where there should be push and energy there is a well-bred *nil admirari* spirit, servile acquiescence in traditional observance, and total lack of efficiency.

"The average boy leaves school at 18 with an undigested surfeit of Greek and Latin, a superficial knowledge of higher mathematics, combined with utter inaccuracy in simple arithmetic; a smattering of French and German, which is soon forgotten, and a conviction that the only people who ought decently to be expected to know more are 'scholars' and 'freaks.'" ("English *versus* American Public Schools," by F.R.G.S., pp. 4, 6.)

As representative of more serious and permanent literature, here is an extract from "The Upton Letters" (noted in Dr. Clifford Allbutt's book already referred to):—

"I declare that it makes me very sad sometimes to see these well-groomed, well-mannered, rational, manly boys, all taking the same view of things, all doing the same things, smiling politely at the eccentricity of any one who finds matter for serious interest in books, in art, or music; all splendidly reticent about their inner thoughts, with a courteous respect for the formalities of religion and the formalities of work; perfectly correct, perfectly complaisant, with no irregularities or angular preferences of their own, with no admiration for anything but athletic successes, and no contempt for anything except originality of ideas. They are so nice, so gentlemanly, so easy to get on with, and yet, in another region, they are so dull, so unimaginative, so narrow-minded. They cannot, of course, be all intellectual or cultivated, but they might be more tolerant, more just, more wise. They ought to be able to admire vigour and enthusiasm in every department, instead of in one or two, and it is we who ought to make them feel so, and we have already too much to do." ("The Upton Letters," p. 48.)

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Suggestions.

Mental, Moral, and Physical Training.

It would be ridiculous to discuss these components of education as though they were divided "into water-tight compartments." I venture some rough suggestions without attempting separate classification.

Every boy ought to work, and can be trained to work, habitually, methodically, and with a fair average of self-exertion.

Business-like organisation of a school can be carried to such a point that every boy does at least a fair amount of work in all his subjects, that his weak points make themselves definitely obvious both to himself and to his masters, and that he realises, in some degree, the effect of his individual efficiency or inefficiency on the school at large. The relation of staff to boys should be so planned that every boy is a member of a sufficiently small unit of control, not based upon age or intellectual standard, under the care of a sufficiency of well-chosen masters. Every boy should receive regular physical training, and have regular athletic exercises, and every boy, according to his age and growth, should be a member of Cadet Corps, or of a junior squad exercised in simple drill, miniature rifle shooting and signalling. There should indeed be continuity of training, from first entry at the Preparatory School to the latest day of Public School life.

Every boy should have a fair modicum of manual training, and, with some range of choice, should be expected to maintain some special "hobby," practical or otherwise. Accuracy, readiness, thoroughness, and originality would thus be encouraged.

In 1903, on the initiative and at the charges of a private citizen, Mr. Alfred Mosely, there went to America a Commission of experts to investigate the conditions of American Secondary Education. The resultant report is a most valuable document, much of which will well repay perusal in view of the general question now before us. The evidence of the value of manual training as an educational force is overwhelming. Space forbids the use of more than two typical extracts, the first from the report of the Headmaster of Bradfield College; the second from that of the Vice-Chairman of the Rochdale Education Committee.

Says Dr. Gray:—

"*Manual Training.* Any survey of American secondary education would be incomplete without a reference to the manual training, which forms an integral part of the systems in the majority of Secondary Schools in the United States. The connection between mind and hand is recognised there to an extent which preconceived prejudices have hitherto rendered impossible in England. But instead of manual training being confined to those who are to pursue an industrial or engineering career, or to those who are relegated to 'shops' merely as a *dernière ressource*, because they are incapable of the abstractions of book learning, in the United States it is regarded in many of the best developed schools as an integral part of a liberal education. Its importance in this aspect varies indeed in different States and in different cities, but everywhere it occupies an honourable place. It is, moreover, graded on carefully-thought out systems, from the cardboard 'modelling' of the kindergarten, to the skilled

engineering processes in the colleges and universities. Though space forbids me to enlarge on the value of this feature of American education, my report would lack a completeness, satisfactory to myself, if I did not pause to emphasise my profound sense of the value of manual training as scientifically carried out in the schools of the United States, leading as it does to the happiest results in promoting that versatility and alertness which is so characteristic of American workers. It is almost impossible to exaggerate it." ("Report of the Mosely Educational Commission to the United States of America," pp. 169, 170.)

Mr. Alderman Heape discusses the subject specially and at length. The following remarks bear directly upon the particular point I am urging:—

"In the United States there is a very remarkable feature in connection with manual training which is unique, and obtains in no other country, and that is, the manual training high schools. In these institutions, in connection with a high school education, a large amount of time is given to handwork of a most elaborate nature."

. . . . .

"The principals are most emphatic in expressing their belief in the educational value of the work, stating that the boys learn such subjects as geometry and algebra much better from realising their value and importance, and that in general they easily 'forge ahead' of other boys.

"The boys are all most keen at their work, and it is constantly urged that if you in the workshops secure keenness and persistence of method, these qualities do not stop in the shop, but are carried into all the other work of the school. The educative value of the manual work in itself is valued very highly; it means care, forethought, reason, judgment, patience, exactness." (Report of Mosely Commission, pp. 207, 208.)

For an exhaustive account of the whole system of manual training, the Report of Professor Reichel should be read. (Report of Mosely Commission, pp. 274-309.)

Now to obtain this value of manual and practical training, such training must be universal, and, in fact, compulsory, over a considerable portion, if not the whole, of school life. It means a busy school, and organisation pushed to a high degree.

A great deal of cant is current about compulsion. Universal compulsion, in a school, within very brief space becomes universal and traditional habit. After all, a school is, in the main, what the Headmaster makes it, just as I am led to understand a regiment is what the Colonel makes it. And what would be priggishness in the individual can be tone in the many.

It is easy to utter cheap jibes at a machine-made education. Of course, a really busy schooling demands not only care, but firmly maintained organisation; but I am much mistaken if it will not result both in high average attainment and in the encouragement of individuality.

Immorality among boys needs more unflinching recognition, more drastic handling, and more comprehensive measures of safeguard. The subject is one which it is painful to discuss; but it is of an urgency which it is both fatuous and insincere to shirk.

On the moral question, then, parents should require of masters, and masters should encourage parents, to be vigilant, sympathetic, and straightspoken. It is far too little recognised at how early an age a boy may go wrong, what insidious temptations he has to face, how often he falls through sheer ignorance, and how responsive he is to those who deal with him sympathetically, but straight to the point. Every individual boy needs definite guidance in this matter, and ought to have it, and every parent should require assurance of the master's attitude therein. Cubicles should be discouraged, and the open dormitory system should be the rule. Both for this and for other reasons the general laws of health should be taught, not as abstract propositions, but as directly affecting the efficiency of the individual. From the merely utilitarian point of view, the boy of vicious habit is and ever must be damaged material.

The real but vague patriotism of the average boy could and should be made the basis of clear teaching on the calls and the privileges of citizenship, and the stimulus of conscious effort towards progress of all sorts.

Cadet Schools.

I must confess to an apprehension that Cadet Schools for the antecedent training of all candidates for the Army may prove needful.

It would, I think, be highly injurious to some of the best interests of the country if all candidates for the Army had to pass through Cadet Schools. It would end once for all some of the most inspiring traditions of many a Public School, for it would indeed destroy the direct personal application of that object lesson in patriotism which every boy can appreciate in heart, however crude may be his mental appreciation of civic duty and privilege. It would narrow the outlook of officers of the Army, and make the public still more oblivious than it already is of the fact that officers are fellow citizens and men of like feelings and needs with the civilian.

The circumstances of the Navy—the need of a common standard of thorough familiarity with peculiar surroundings, the highly specialised demands of the profession, the continual re-assorting of the members of a staff—call for an education conducted in common from the earliest possible age; and the comparatively small number of officers required makes this feasible.

No such identity of training could, I think, be secured, even were it desirable, in the case of the Army. The numbers involved are too large. A school or schools of 1,600 to 1,800 cadets would be necessary in order to supply with certainty the normal annual demand for, say, 350 officers. All flexibility of supply would be eliminated, and in time of sudden increased demand, very crude material would have to be requisitioned. The need of a large and flexible supply of good material is, indeed, both an argument for some use of the Cadet School, and a reason against its complete adoption as the one system.

I believe one Cadet School to be an actual necessity. Without a common standard of reference and example, to which schools and parents alike can refer with confidence, it will be long before the keenest of Public School masters can bring Public School training to anything approaching a common standard of efficiency.

A Cadet School of 500 boys would be invaluable in this respect. It would also produce an output of the highest and most direct value

to the Service, by reason both of the quality of its men and the general influence of their efficiency. It should be a Model Public School, with a military bias, not a specialised and professional Military School. Its discipline should be scholastic, not military, exercised upon units of organisation established on military outlines. Its literary education should be on broad and consistent modern lines, and not limited to mere examination requirements. It should give well-balanced manual, physical and military training. Its direct authority and detailed administration should be in the hands of professional schoolmasters, working under a Board appointed by the Army Council, just as a Public School is worked under its Governors. Entry to it should be at the age of 13. A candidate provisionally accepted, after full private report, should first go before a Medical Board, with liberty of reference to a Board of Appeal, and, being certified as of sound physique, be classified according to his physical quality. He should then be admitted to a simple qualifying examination much on the lines of the present Osborne Examination. What was left of him should then go before a Board of Selection, before whom should be laid a brief of the information derived from private report, medical inspection, and literary examination. The candidate should appear under a distinguishing number only, and due safeguard should be used against any imputation of private influence.

Cadets thus selected should form exceptionally good material. During their course they should be open to withdrawal if found in any way unsuitable.

They should be required to pass a standard examination, equivalent to the Qualifying Examination, before becoming eligible for admission to Sandhurst or Woolwich. After this examination they should work on for the open competition, just like other Public School boys, with the exception that, taking the annual output at, say, 100 to 125, there should be offered for competition in the school annually say, 30 or 40 special cadetships, carrying admission to the R.M.A. and R.M.C. respectively.

The effect on Public School work generally would, I submit, be very great. Parenthetically, I would suggest that, whether in connection with such a scheme or not, the Army Council might greatly promote both the efficiency of Cadet Corps and the solution of the problem of universal military and physical training in Public Schools, if they would institute a figure of merit to be awarded on the aggregate efficiency of a Cadet Corps, and assign corresponding "Service marks" of moderate amount to candidates therefrom.

Local circumstances of Cadet Corps differ widely, but, provided efficiency marks could be obtained by optionally selected tests out of a comprehensive schedule, each corps could adapt itself to its circumstances. In a Cadet School or in Cadet Corps above a certain number such a figure of merit might be separately obtainable by each company or half company, and would greatly stimulate smartness. This, however, by the way.

The organisation of a Cadet School need present little difficulty either in relation to instruction or domestic care. It should be divided into, say, six equal senior houses or company units, with two junior companies, through which cadets would pass before being assigned to a senior company. Each unit should have its distinct disciplinary staffing and house quarters, but there should be central messing and instructional arrangements.

There would be no difficulty about staffing. Among the Army crammers alone there is a sufficiency of brilliant and stimulating teachers intimately acquainted with the needs of the Service and the defects of the present-day candidate, and eminently capable of forming the backbone of a sound staff of instructors and lecturers.

Neither does finance present any obstacle. One architect at least has solved the problem of planning a school for practical and economical working, and buildings for such a school as I have sketched can be erected at a cost not exceeding £250,000, and for a much lower sum if a wise use is made of modern constructive methods. The actual working cost need not exceed £80 per head per annum, and an inclusive standard payment of £130 per annum by civilians would allow of Service claims being recognised at a standard rate of £100 per annum, and special reductions being made in special cases. It would also allow of a sufficient sinking fund. The cost to the State would thus be nil; there would be no danger of the creation of a military caste—not that there is much danger of militarism in any shape or form in this country—and both military and civil interests would profit.

Such a school would, I believe, be the ideal Public School, and would aid a re-organisation of our great schools generally, whereby their fine traditions and distinctive spirit could have full play amidst more practical conditions.

Failing some such movement, I fear there is no alternative but a system of strictly professional Cadet Schools.

The demands of the age are too urgent for our slow rate of progress, too exacting for our unbusiness-like and wasteful methods.

Commander the Lord ELLENBOROUGH, R.N. (Retired):—I regret that I may have to leave this theatre before hearing all the criticisms of those who may differ from me. I hope that my doing so will not be taken as a discourtesy on my part. I cannot be in two places at once. The House of Lords is about to place on record its high appreciation of the services of Lord Milner, in South Africa, and I feel that Lord Milner's services have a prior claim on me. I quite agree with the lecturer when he states that our public schools are in great need of reorganisation and reform, and that the War Office ought to establish an Army Cadet School, on the lines of Osborne and Dartmouth. If found successful, more schools of the same pattern should be established. Eventually, I think that educated men would prefer that their sons should go to such schools, even if not intended for the Army, instead of being sent to dead language schools, where an Elizabethan education is given in a post-Victorian age, and where boys are really being specialised for the Church and the Bar. The present position of the education of the sons of gentlemen cannot be thoroughly understood without reviewing the origin of the older public schools and of the Universities. They were originally founded, when Latin was almost the only language in which books were written, when there was no English literature worth mentioning, and when the only educated professions were the Church and the Law. Latin was also the language of diplomacy. At that time most of the lawyers belonged to the Church. In fact, all who were able to read or write, claimed "benefit of clergy!" More schools were founded in the time of Edward VI., and Greek was introduced into England in 1490. Many teachers of dead languages appear to think that what was good enough in the time of Edward VI. is good enough for boys in the time of

Edward VII. As if the world had stood still in the interval. The time of Edward VI. was a pre-Shakespearian age, when English literature can scarcely be considered to have existed. Men who knew a little about science were considered alchemists, or magicians, and ran a considerable risk of being burnt alive by the Church under the Education Acts of those days. I believe that there are some men now who would burn a science master if they could do so with impunity. The stagnation of our public schools can also be partly accounted for by the mischievous practice of masters, who, in their own interests, are always telling boys, "That's right my boy, always stick up for your school," until the poor fellow thinks it mean and ungentlemanly to say a word against his school, either while there, or in after life. Now, if such boys, on attaining manhood, had endeavoured to reform our schools, they would have been doing a great service to their successors at those institutions. For instance, look at the barbarous pronunciation of the languages of Cicero and Demosthenes as taught at the Universities and at public schools. Look at the unnecessary difficulties placed in the way of the student by the manner in which those languages are taught. The Universities might remedy these by decreeing that after a certain appointed day no man should be allowed to teach Greek at a University, who had not studied modern Greek for at least six months in Greece itself, or to teach Latin unless he was well acquainted with the Italian language, and was also able to converse in Latin. In fact, all our teachers of Latin and Greek should be sent to school again during the holidays. Graduates from Athenian and Italian Universities should be imported for the purpose of teaching during the interval. I myself began Latin at the age of six, Greek at the age of 9, and wasted a great deal of my time in the study of those languages until I was 13. At the age of 11, in company with other lads of the same age, I actually wrote Latin verses with the help of a verse-making machine that the masters called a Gradus. I looked out a Latin word, found a synonym that would scan, and put it in regardless of its suitability. I had to read a great deal of Ovid, and always wished that I could have heard the opinion of Ovid on my verses, instead of that of the masters who sometimes praised them. I think that my poetry would have amused Ovid. It must have been something like Baboo English. Dead languages are the barnacles of modern education. Even in science, we constantly handicap ourselves by using Latin and Greek words, when English would answer the purpose a great deal better. I suppose this is done as a concession to the classical side, and to the mediæval system of making a mystery of knowledge. When the Act for the Prevention of Cruelty to Children comes up for revision, I hope that clauses will be added to it, making the taking of money for teaching Latin to children under nine, and Greek to children under 12, offences punishable by a month's imprisonment without the option of a fine. Boys should certainly read translations of the classics. I prefer Lord Derby's Homer, but Pope's version will appeal to many. The study of the original should be deferred until the brain has reached maturity. I first heard of science from Faraday, when I attended his lectures for boys during my Christmas holidays. Faraday thoroughly understood boys. They liked him, and enjoyed his teaching. I have often thought what a much higher position England would now hold in the scales of civilisation when compared with other nations, if the members of a governing body of a school like Eton or Harrow had offered him a Headmastership, and had given him a free hand. He always refused to enter the service of wealthy manufacturers, preferring to

continue his work of research on a small income. But I think that the position of Headmaster of a great public school would have tempted him, as he might have felt that in such a position he could have been more useful to the world in general. For nearly fifty years, the entrance to the Army and the Civil Service has been through the gate of competitive examination, on the Chinese system of a pen, ink, and paper knowledge of ancient literature. Has the Chinese Army been so successful in war as to be deserving of imitation? Is their Civil Service system much better than ours? We have committed this folly in deference to the wishes of a small group of persons who are pecuniarily interested in the teaching of dead languages in the obsolete manner that I have referred to. None of these men have ever seen service, yet we have allowed them to dictate to the nation what is necessary for young officers to know on joining the Army. The older public schools having become obsolete as wooden battleships, their place has been partly taken by technical schools, who, although they may give a good training in certain branches of science, too often neglect to teach ancient and modern history, English literature, English and other modern languages. Public schools and technical schools have much to learn from one another. The modern side at a public school is generally a half and half affair, looked down upon by the dead language masters. Public schools only educate one-half of a boy and technical schools the other half. A boy is taught how to use a pen, and to catch a cricket ball, but otherwise his manual training is completely neglected. For these reasons it was found necessary to establish a school for Naval Cadets at Osborne. I hope Mr. Haldane will have the courage to shake off the yoke of the public schools, and to establish similar institutions for the Army, leaving the older establishments to supply the wants of boys intended for the Church or the Bar.[1]

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[1]As, by the rules of the Institution, I was only allowed a ten minutes' speech, I have thought it desirable to add this note to what I said, so to prevent my views being misunderstood, I hold that all boys should be taught history, both ancient and modern. They should not, however, begin with Julius Cæsar's invasion of Great Britain, and then never get to the end of the book, or be taught all about Themistocles and Salamis, to the exclusion of Nelson and Trafalgar, Togo and Tsushima. They should also learn the English language thoroughly, read some of its best literature, and practice composition, but should not be made to work at grammar by itself too early in life. They ought to receive instruction in French, German, arithmetic, mensuration, drawing to scale, geography, and the simpler elements of geology, physics, electricity, mechanics, and hydrostatics, hygiene, including personal hygiene. They should also practise gymnastics, and some form of manual training. Now there is not time enough for all these subjects unless Greek and Latin are given up. Euclid should not be taught, but a copy should be kept in the school library for reference. Considering the inferiority of their instruments, it is a wonder how much he and his predecessors discovered. He never had a pair of parallel rulers, nor any of those delicate instruments of measurement that we now possess. As, however, he knew nothing of Algebra, decimals, or logarithms, no school in England would at present think of engaging him as an assistant, until he had spent some time in modern studies. All boys, unless exempted by a medical certificate, should join the cadet corps at about 13. Boys might commence specialising at the age of 15 when those intended for the Church and the Bar might commence Latin and Greek,

Major-General Sir THOMAS FRASER, K.C.B., C.M.G., R.E. :—This is a subject in which every soldier ought to be interested. First of all, there are two remarks which have been made in this instructive lecture, on which I would like to say a word. The lecturer remarks that the Boers were better trained for the late war than the British officer. I think he should recollect this, that there are two races in the world, the Japanese and the Boers, who, while they have had many of the advantages of civilisation, and access to the best arms in the world, have not been corrupted by civilisation as the most of Europe and a great part of America have been. When I say corrupted I mean that civilisation has, more or less, destroyed the fitness for war in the men of all the highly civilised races. It was so in the days of the Romans; it is so now. Civilised races only hold their own by more highly trained brain power, by higher education; by constantly adopting scientific improvements; and by the perfection of the armaments they turn out. They are not, however, as well fitted for the hardships of war and the strain of fighting as the less nervous races, which live a simpler, a more open-air, and a less artificial life. We see the perfection of soldierly qualities in the Japanese, who, with great brain power, instructed by the highest intellects of Europe, have combined with that the physical fitness and endurance of their men, which has enabled them to fight so splendidly. On the other hand, the Boers did lack one great thing, which is the mainstay of every Army, and which ours possessed, that is discipline. Discipline is the spirit that enables men, when ordered, to die willingly, straightforwardly, and without hesitation; and that is a thing the Boers hardly possessed. They were never willing to die at all. Some behaved gallantly on occasions, but I think I do them no injustice if I say they were incapable of any general offensive policy. In that way they were not to be compared with the officers of our Army, nor of the great Armies of Europe. With regard to America, I see the lecturer, in quoting another experienced authority, says that the pupils in the United States are much more learned, much more brilliant, and more active than ours, and that that is due to the public schools. I think, as far as it is true, it is due to an entirely different cause. The United States possesses an area not much smaller than Europe, without Russia, and a white population of 65 millions. Consequently, there is in that country an immense

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which should be taught as living languages, and pronounced as the Italians and modern Greeks pronounce it. Of course, schoolmasters will have to learn to speak Latin and Greek. Some of them may complain of having to go to School again, but those who are too old to learn are too old to teach. In an article on the awakening of China, in the *Morning Post*, of the 4th of April, I find :—"Even the old scholars, the 'literati,' the strongest conservative force in China, have caught the infection, and students of thirty or forty years of age are found patiently starting their education again." Our schoolmasters must do the same. We copied the Chinese in establishing an examination in ancient literature, as a condition of admission to the public services, and now we had better follow their example in giving it up. The education of future generations of boys and men must not be sacrificed to the vested interests of a small knot of men who can find no use for their Greek except that of imparting it to others. The recent action of the teachers of ancient Greek, who flocked to Cambridge for the purpose of outvoting the more enlightened residents on the question of compulsory Greek, was a disgrace to English education, and calls for immediate legislative interference.

opportunity and scope for energy. The whole country is filled with the idea of work and of doing work, because they have the space before them, and they have the encouragement that a young race has to do great things, as they have already done. I do not really believe that we should be right in saying that it is the difference in education. I can only say my conviction, based on wide observation in the States, is, that, as in every other country, success in life is due to force of character and capacity for giving effect to it. Education to a certain extent fits men for using the great qualities that are born in some, and that are developed by the circumstances in which they live. With regard to the subject that the lecturer has put forward as the basis of his lecture, the Cadet School. In this connection the Army is now told that because the Navy has adopted a new system of particularist education, that the Army should adopt it also. The Navy doubtless knows its own requirements, and how to meet them; so does the Army; but, as the conditions are absolutely different, the presumption is that what suits the Navy is the last thing that would suit the Army, and I must say, as an officer who has seen something of military education, that I look with very grave doubt and anxiety on the idea of establishing anything of the kind. I am entirely convinced that we cannot do better than adhere to that system of public competition in the justice of which the country has well-founded confidence, and which enables us to draw officers from the public schools of the country, as far as they can supply us. We must remember that Army candidates form only a small part of the output of the public schools. The time is, however, coming presently when the number of Army officers required will be so great that we cannot count on getting them all from the public schools; but as far as we can, my view is, that we ought, in the interest of the country, to strive for more effective education in the public schools, and draw as before many of our officers from them. We have tried the experiment of Cadet Schools; we have had cadets who came from the schools, and I can only say that the opinion that was formed in the Army at the time was entirely unfavourable to the system, which was abandoned, and I sincerely hope that it may never be re-adopted. But I will say this, that it is extremely important, if we are to rely on the public schools, that they should conform to commonsense measures of practical efficiency. My friend, Lord Ellenborough, has said what was very much in my own mind with regard to the present education in the public schools. The educational output is inferior. It is not entirely the fault of the public schools, where it is well known they overwork boys physically to keep them out of mischief; but public opinion goes further, and insists that all else must give way to the cult of sport; and that literary work is quite unimportant. This leaves too little time for tired boys to do real work, and, coupled with the attempt to teach too many things, leads to most of them learning nothing well. A Cadet School would be no cure for this. I quite agree with Lord Ellenborough that the exclusive training in classics, which was part of my own education, does not meet modern requirements. I do not believe that any boys can learn thoroughly well at school more than two languages, of which at least one should be modern, and a little mathematics; a great many can only learn one language. We must remember that languages and mathematics cost so much drudgery and time, it is only under school discipline they are learnt by most. They are also the only subjects which can be tested by examinations, for they cannot be crammed. I know there is a very strong feeling among teachers that they should be the only judges of the results of their

teaching, and that independent examinations are a mistake. All I can say with regard to that is, that independent examinations are the only methods by which the individual finds out whether he knows anything at all. Such examinations set up a standard of education for schools to work up to; and, without them, the State cannot be sure, when it takes boys into its service, that they are competent from their education to give effect to the capacities which it is hoped they have. I trust that the Army will continue to rely on the public schools; but undoubtedly the public schools, and the Universities which rule them, must reform themselves, not only in the interests of the Army, but in the much greater interests of the whole community. Then we shall not want Cadet Schools with their many disadvantages and particularisms, which tend to create an Army cast. The Navy, where boys are rightly entered very young, has presumably no alternative; the Army fortunately has, and should stick to it.

The Rev. A. E. Rubie, D.D. (Headmaster Eltham College):—I belong to that class which has been so completely pulverised already by Lord Ellenborough's eloquence. I am one of those benighted teachers of classics, but in spite of the pulverisation, I have still courage to rise upon my legs simply because I do not see any other schoolmaster present. Although I am sorry to have to do so to a brother headmaster, it seems to me, if I may say so, that I ought to rub in what has been already said by the last speaker. It is not as though the public schools were not progressive. Despite his lordship's eloquence, I think there is a difference between the education in the time of Edward VI. and in the time of Edward VII. Even amidst hide-bound tradition, which nobody regrets more than schoolmasters, there is a certain amount of progress being made. We have got out of the trammels of exclusively Latin and Greek. We have got to know that there is such a thing as mathematics; we have got to know that there is such a thing as science; and we have got to know perfectly well the value of manual training, and also of physical training. These things are established facts in most public schools. The problem, of course, is to adjust the various branches of education; and I venture to differ entirely from the lecturer on the following grounds. It does seem to me very strongly in the light of experience (and anyone will readily recall many schools to their mind) that a class school is necessarily narrow. Now, what I am sure every officer here present would wish is, that the future officers should have greater breadth of view. It has been conclusively proved in the case of Marlborough, in the case of Wellington, in the case of Epsom, and in the case of many other schools which were originally founded as class schools, that a class school is an absolute mistake, because it gets necessarily only that class of scholars which belong to its particular class, and its pupils do not obtain the benefits which come from mixing with boys of other views, boys whose objects in life will be entirely different. Therefore, I am sorry to have to differ with my brother headmaster, but I do so entirely, absolutely and completely. I think by those means you would get not a progressive type of Army officer, which is what we want, but you would necessarily get a "class" officer coming from such a school. You will correct me if I am wrong, but I think history shows that when Wellington was founded the first headmaster, if I may use school-boy language, had a tremendous row with his governing body, because they wanted it a class school confined to the Army, and he said: "No, that will necessarily give it a narrow tone." He won his point, I believe,

with considerable exertion, with the result that Wellington was freer, and all the other schools freer, just because they are not class schools. I hesitate to speak from personal experience, but I belong to what was once a class school; but I am perfectly certain it derives very great benefit from the fact that it is no longer so. If, therefore, the public schools will reform themselves—and they are reforming themselves—I cannot help personally thinking that the best material for the Army will be drawn from them. Although I may perhaps be taking up too much time, may I throw out, for the reflection of the Army officers present, whether it is not advisable to do away with the class institutions at Sandhurst and at Woolwich. Some of us who have been thinking very deeply on this problem have come to the conclusion that there is attached to them a "class" feeling which ought not to be attached to them; and some of us have come to the conclusion that the old Universities will progress—and they are progressing—they will give an education to the Army officer which no class institution can possibly give. If any Army officer will carefully study the syllabus of Army studies, which has been drawn up by the University of Oxford for this year, it would surprise him to see what a tremendous lot the University is trying to do with a view to getting Army men to go there. I speak altogether under correction, but I do not think experience has proved that the men who come from the University are by any means a failure; on the contrary, I have heard many people say that they are better than those who are trained in class institutions. The Universities, of course, would have to widen out, but they are widening out every day; everybody who looks at the course of studies in the University of Oxford for this year will see that that is so. That is only by the way; but I must confess I do not agree in the least with the lecturer in his main contentions. I ought, if I may say so in passing, to throw out a word of thanks to him for the many excellent things which he has brought before us—the need, for example, of physical training for all; the need also of manual training for all; and many other points in his lecture with which one can unhesitatingly agree.

T. Miller-Maguire, M.A., LL.D. (Barrister-at-Law, Inner Temple):—I would like to begin by congratulating Mr. Tracy for bringing before such a distinguished and highly interested audience, a subject on which the future of our Navy and Army, too, indeed, of every member of our Empire depends. Naval and military efficiency depend—may I quote Latin ideas, if not words, by permission of Lord Ellenborough—on sound brains in sound bodies. In modern times, and having regard to the rivalry of highly trained and intellectual races in the Far East, and in the Far West, as well as in Europe, brain power, as the lecturer pointed out, is to physical power as ten to one, and in all ages, the moral has been to the physical as three to one. Mr. Tracy very properly holds up the fashionable public schools to contempt. Lord Ellenborough believes that even their very classical education, so-called, is a fatuous anachronism. I quite agree that these schools are plague spots; they are centres of intellectual and moral decay. Of course, they might be centres of light and leading. But is there any evidence that the majority of their pupils—and such splendid material too!—after all the waste of their time and their parents' money, are fit to lead their poorer fellow-countrymen in the paths of patriotism, or self-denial, or duty-culture? Quite the opposite! The richer classes are only too often a disgrace to our civilisation. Ask the Navy League, the Army League, and the National Service Leagues what they think of the moral and

mental tone of the public school products. Ask the Labour Members of Parliament what they think of Oxford and Eton M.P.'s Now, we contend that, notwithstanding Lord Ellenborough's censures, a true study of the spirit of the ancients—"the wisdom of the ancients"—would be very valuable. I would tolerate much devotion to Thucydides, Euripides, Homer, Virgil, and Tacitus. If the clerical schoolmaster imbued his students with the contempt for mere games and luxury, and the patriotism and brain and nerve power that animated the heroes of Plutarch; if the tone of these modern Christians were half as good as the tone of Chaucer's Knight, or even as that of Japanese Bushido, we could forgive much. Classical education, as England has, as his Lordship contends, became classical tomfoolery. I had read more classical works in translations, and in the original at the age of 16 than nine-tenths of the Eton boys read in all their lives, and these works did as much good, especially as we were impregnated with ancient history, including the warnings of Gibbon. I see Lord Ellenborough agrees, I salute him and greet him, and rejoice in his honest utterances. Let him go back to the Parliament and teach the paltry political imposters of both parties, Chapman's "Homer," Dryden's "Virgil," Bacon's Essays, and Gibbon, and he will do the State much service. But the miserable clerical pedants, whom he has ridiculed, do not teach English literature, or the history of our Empire, or the lessons of Roman or Greek literature and history, they only teach very bad syntax and prosody at enormous cost. Enthusiasm does not exist in their dreary caravanserais. I felt all aglow, almost intoxicated with rapture, as I read Homer, and Virgil, and Cicero, and Chaucer, and Milton, and Spenser, and Burke, in my youthful years—I almost feel so still. These mighty writers chronicling the deeds of heroes, and painting the charms of Nature, and the graces of Eve or Venus, set my young soul on fire. I know not, with what weird excitement; but

> "Valley, grove, and stream,
> The earth and every common sight,
> To me did seem
> Apparelled with celestial light,
> The glory and the brightness of a dream."

Listening to his Lordship, all these early visions thronged back to my memory. I felt once again under the spell of Prospero, and my memory began to "Clothe the palpable and the familiar with golden exhibitions of the dawn." It so happens that I have a strange document in my pocket that so ably supports Lord Ellenborough that I quote it, as against the contemptible anachronism which he justly attacks; but will he admit that any good comes from classics?

Lord ELLENBOROUGH:—I admit that history is a very good thing.

Dr. MAGUIRE:—Then you agree with Euripides and Tacitus that games and sports and gambling are signs of natural degeneracy, and that we must degenerate unless we turn from play to knowledge? The German Emperor anticipated Lord Ellenborough, and turned Eton and Harrow systems into public contempt twenty years ago, as follows:—"Geehrter Herr Amtsrichter,—Accept my heartiest thanks for the two pamphlets which you sent to me. I have read 'What we are Suffering From' with great interest and still greater pleasure. At last, then, someone has stepped forth to attack with energy this petrified and most soul-killing

of all systems. I subscribe to every word you have written. Fortunately, I had two and a half years in which to convince myself of the manner in which our youth are sinned against. On many things which you adduce I have myself pondered in silence. Homer, the glorious man, for whom I greatly 'enthused,' Horace, Demosthenes, whose orations must inspire everyone—in what manner were they read? With any enthusiasm for the descriptions of the battle, the arms, or of nature? Heaven forfend! Every sentence was divided and quartered with the dissecting knife of the grammatical, fanatical philologists, until the skeleton was smugly laid bare and the general admiration claimed for the number of manners in which *an* or *epi* could be placed. THE LATIN AND GREEK ESSAYS (A MONSTROUS NONSENSE), what an amount of time and trouble they swallowed! and what stuff it was that finally was produced. Horace would have given up the ghost at sight of it! Away with this rubbish! War to the knife against such teaching! The result of this system is that our schoolboys are better versed in the syntax and grammar of the ancient tongues than the old 'Greeks' themselves, that they know by heart the generals, battles, and order of battle in the Punic and Mithridatic wars, but are very much in the dark concerning the battles of the Seven Years' War, to say nothing of the 'far too modern' wars of '66 and '70, which they have not 'yet had'"!!! Why not teach English literature and British history to our 40,000,000 of people, who, from these Isles, are responsible for 34,000,000? Why ignore Shakespeare, and Pope, Dryden, and Bacon, and Byron, who teaches us more about the ancients in the "Essays," and in Childe Harold, than is taught in the class-rooms of Balliol or Winchester?

Lord ELLENBOROUGH :—I do not want to leave them out. I am arguing in favour of them.

Dr. MAGUIRE :—Well, so be it! But the gallant officer in the chair will be surprised when I tell him that twenty years ago there was a course which English officers learned, which was an admirable course — it embodies the very ideas of the noble Lord. It contained the history of France; it contained the Peninsular War; it contained the Seven Years' War; it contained the old Hundred Years' War between France and England—before there was an *entente cordiale;* and it contained Shakespeare, Chaucer, Pope, Spenser, and Byron, and Burke. It contained all these excellent branches of study, and officers of the Army, who are now a credit to their race, admit that the best minds of the British Army were impregnated with literature twenty or thirty years ago under that system. It was spoiled because the Stanleys, Stanhopes, and Morleys, and other political experimentalists at the War Office listened to the public school-masters, and deliberately degraded education in the interests of these triflers. How do I know that? Lord Morley, when I challenged him, wrote and told why. He said that he wanted to please Eton and Harrow, and similar anachronisms. I appeal to this audience to use its influence, that, for the future, the officers and gentlemen of England may, as the German Emperor insists in the case of his people, be thoroughly well grounded in the language and traditions of their own race, not that I would have them leave out the excellent traditions of any other race, or the warnings of any other race. I would like to emphasise the point about the decay of the nation in the loftiest subjects not being ignored. But Lord Hugh Cecil has distinctly stated that the religious teaching of the public schools

results in the development of religious ignorance and indifference among the members of the upper and middle classes of England, that was not to be found among the poorer classes of his own constituents. But I will not wander into the paths of theology, and I will conclude by saying that I am in hearty sympathy with Lord Ellenborough, and desire to offer my thanks to Mr. Tracy for a lecture which has already led to much good and to an enthusiastic debate.

Lieut.-Colonel T. H. Baylis, K.C., M.A. (late 18th Middlesex V.R.C.) :—I accept the challenge of Lord Ellenborough. I am an old public school boy.

Lord Ellenborough :—So am I.

Lieut.-Colonel Baylis :—I am glad to hear it. It is eighty years ago since I went to Harrow School. I remained there eight years, so I think I know something of the old public schools, and I also know something about the new public schools. The new public school is not what the old public school was; it is only very moderate compared with what it was, even in my own day. There is one very important matter which concerns the life of all of us, and that is the tone and character which a public school gives to a boy. It is the tone and character which I received in my schooling to which I am indebted for my success in my profession as a judge, as a King's counsel, and as a lieut.-colonel. I believe I have advanced more because of the tone which was given to me in the public school than by any other means of education. That is the first thing of all—learn to be a British gentleman, and that is what the public school teaches above all other things. Then, as an old public school boy I fully appreciated the physical training I received. I joined in the football at Harrow, and the benefit I received thereby was that I not only obtained physical strength, but health, the first consideration of life. What is life without health? I believe that physical training is necessary in our schools, and that football, cricket, and rowing are essentially necessary for the attainment of health and physical development. The scrimmage in the football field teaches a boy to be courageous; it teaches him the nobility of self-sacrifice—to rush in where the danger is thickest. What are the lecturer's words? He says : "Sheer physical courage, a quick eye for opportunity, and the power of inspiring confidence amongst his men, were, perhaps, some of the chief characteristics of a successful regimental officer." What is an officer if he cannot inspire confidence in his men? What would Nelson have been if he had not inspired confidence in them? They did what he told them to do, because they knew he was to be depended on. What I desire to emphasise is that the first thing we have to do is to train up boys so that they shall be physically strong, so that they shall be healthy. As an old public school boy I have accepted the challenge of Lord Ellenborough to "stick up for your school."

Major E. C. Hawkshaw, R.A. (retired) :—May I be allowed to say a few words on this interesting subject, having been through the entire mill bearing upon it? Fox hunting, entailing blowing a horn, I began my military career as a bugler in the Harrow School Rifle Corps, the only post in the British Army for which my age of 13 years, with stature to match, qualified me. Later on I shot for my house with Martin Hunter, afterwards in the Coldstream Guards; at times also for the school. Then

came a crammer, followed by the R.M.A. and 22 years of R.H.A. and R.A. The question is: "What constitutes a good officer?" I thoroughly agree with the last speaker, that first of all he must be a gentleman, and to this I beg to add that he must be a thoroughly trained *man*, who bases his carrying out of the King's Regulations on the Ten Commandments—the foundation of all law, military and civil. The question of religion has arisen during this discussion. I feel sure that it will be agreed with that an officer with good sound religious training inculcated at home and at school will possess backbone and confidence, and command most influence for good with his subordinates. The selection of officers for different billets cannot be too carefully carried out. "The education of officers for the Army" is the cry of the day. I maintain that there are any number serving who have all the making of leaders of men, and now that the Army bids fair to be run on business principles, these men will doubtless be taken advantage of, and not ignored and repressed as was formerly the case. I am much in favour of public schools in preference to cadet schools, urged by some reformers. They enlarge the mind, and I am at a loss to think of a better scheme for success in the soldier's career than a large, good public school with general education, comprising the dead languages to teach the derivation of words, up to a certain point, then the modern side as we had at Harrow. I also urge drill and the use of a rifle for every boy in the school; to be taught so many hours a week during school hours. Under the above conditions the cramming system, for which no good word escapes me, is needless, and sound manly habits accompany the boy through the school straight into the Army, which will profit accordingly.

Colonel G. C. KITSON, C.V.O., C.M.G.:—As I happen to be Commandant at Sandhurst, I thought it might be of interest if I pointed out some of the defects of public school education as they appear to me; I see the results. The lecturer has spoken of originality and individuality. That is where our boys fail so signally. They are not taught to think, they cannot formulate ideas, they cannot make plans. On the other hand, the public school training leads to excellent memories. The memories of the boys are very good. In working up for an examination they will get up a mass of ideas, which they will put under the headings of (*a*), (*b*), (*c*), and (*d*), etc. They are taught a *memoria technica*, by which to remember these headings, and that is all. I do not think that this is the class of training which we want in an officer. If we have to take up a defensive position, and start to think of the headings in "Combined Training" and our *memoria technica*, I do not think our defensive position will be a success. Then Lord Ellenborough said that the public school boys were taught to hold a pen. I can only say my experience is that boys at the present day do not know how to hold a pen at all. They can neither write nor speak English; their composition is very bad, and their conversation is very much worse. As a staff officer I have always found that the faculty one wants most of all is to be able to describe events that one has seen. I only wish we had had some training at school which had taught us how to do that. If anybody was to see one of my classes struggling at their lessons they would realise that our boys cannot write. In a staff officer nothing can be of more importance than that he should be able to write quickly and legibly, and I can only say that at the present day our boys are not taught to do so at public schools.

Captain LEWIS BUTLER (late King's Royal Rifle Corps) :—I only wish very briefly to touch upon one or two points in the paper. First of all, I should like to ask Mr. Tracy whether he has read Dr. Shadwell's recently published book entitled "Industrial Efficiency." If he has not done so he will find that it gives a second and a different side to the idea of American education, and he will find that American education is probably very much more partial than he seems to think. Mr. Tracy mentioned in one paragraph a quotation from a gentleman who pointed out how very much better the Boer was than the British officer; but he did not mention what perhaps is not always known, viz., that our Colonial forces invariably begged to be commanded, not by Colonials, but by British officers. He also mentioned the idea of patriotism. Patriotism, Sir, is in England to some extent an abstract idea. France has been invaded; the Frenchman knows what it is to die for his country; Germany has been invaded; Russia has been invaded; Austria has been invaded; and all the inhabitants of those countries know how to die for their country. England, on the other hand, has never been invaded since the days of William the Conqueror, and consequently, as I say, patriotism is an abstract idea. Dr. Miller Maguire and the lecturer have both discussed the question of the public schools; but I would venture to ask whether we ought not to go into it a little more deeply. We say that the boys are not taught what they ought to be taught. Then who are the teachers? The teachers are professors who have come almost exclusively from Oxford and Cambridge; and what are Oxford and Cambridge? Oxford and Cambridge are two Universities which arrogate to themselves a monopoly of education. Some little time ago I was speaking to a schoolmaster about a public school where a new headmaster was being selected, and I said to him, half in joke: "What would you think of so-and-so?" mentioning a man who had been most successful in military education. His answer quite astounded me. He said: "What, would you have an uneducated man for such a position?" My nominee had been a most admirable staff officer; he knew the Empire from east to west; he had been attaché at a Continental Court, and he had been on friendly terms with monarchs. He had, as I say, had the greatest possible experience of military education, and yet he was called an uneducated man! And who are the people who arrogate to themselves the right to say such things? Oxford and Cambridge are Universities which I think may be described as old monastic anachronisms, which, even if they have been improved of late, are still perhaps four centuries behind the times. What is their dress? Their dress is that of the scholar of the fourteenth or fifteenth century. Who in the world can help laughing when you see a person running about in a cap and gown? What should we think if the Army were dressed like beef-eaters? and yet that is not in the least more absurd than the present habits and ideas of the Universities. I am told that only recently the Bishop of London went down to preach at Oxford against the vice of drunkenness. Is there any community in the world, excepting a University, to which a bishop would have to speak on the point? Lastly, I was very much amused some time ago at seeing a notice that the Crown Prince of Siam had received a University education, and everyone was enormously pleased, because they said: "How nice it is to see the civilisation of the West brought into contact with the East." A friend of mine, after he had left, met a distinguished Siamese, and asked him how they were getting along in Siam. "Oh," he said, "we are jogging along very well." Then my friend said: "What about those horrible

barbarous tortures in Siam?" "Oh," he said, "we should have got rid of them by this time but for the personal intervention of the Crown Prince of Siam, lately a graduate of Balliol College!" When we have such things as these before us, I really think we must ask ourselves whether we ought not to go to the root of the matter; whether there is not still further room for improvement in our own Universities. And until we see such improvements, are we right to expect much better from our public schools?

The Rev. F. W. TRACY, in reply, said:—I should like, first of all, to tender my very hearty thanks to the speakers who have criticised my poor lecture, and for the very sympathetic manner in which they have spoken. If I may be allowed to refer to some of the special remarks that have been made, and not to go into the matter in detail, I should like to say that there appear to me to be running through the speakers' minds two opinions in the main. One opinion is, that Cadet Schools are things absolutely not to be thought of if anything can possibly be done to prevent them, because a Cadet School would be a class school; and the other opinion is precisely the reverse. The reason for the opinion in favour of Cadet Schools is, that the public schools and the Universities—because you must practically, at the present time, unite those two things—are either not progressive, or not sufficently progressive. I endeavoured in my lecture to indicate that I did not think a Cadet School was a thing absolutely to be desired in the abstract. What I tried, as a humble layman, to prove was, that, so far as one can judge from the trend of modern conditions in relation to warfare, we have to face this practical fact, that if we do not turn out more of the highly-educated professional class of officer on the average than we do at present, and if we are not able to rely upon our public schools, and I will say on our Universities, for a more satisfactory output from that point of view, we are going to pay for it. And I submit that any amount of sentiment is nothing against that. It is said that a class school is an undesirable thing. I daresay it may be; I really do not know precisely why, but I have a sort of feeling that it may be. But I think a much more undesirable thing would be a disastrous defeat of the Empire's forces which modified the whole position of our Empire. Speaking as an average citizen, I am ready to face any amount of the disagreeable or objectionable effects of militarism rather than find the Empire going down beause we were not quick enough to adapt ourselves to the requirements of the age. I am afraid I do believe really, for what my poor opinion is worth, that the whole system of Cadet Schools is practically a business necessity at the present minute, and, I am very sorry to say it. I set the highest value on public school training, as I have tried to indicate, so far as it goes; I set the highest value, as I also tried to indicate, on the old classical training, but that has gone for ever—there are no real classics nowadays at all; I set the highest value on real athletics, properly carried out, but we are drifting more and more into the condition in which so many play and so many more look on. That is not good enough. The long and short of it is, I do most strongly urge that we need to drop sentiment; we need to look at the thing dispassionately, and in the most business-like way we can. I do not set the American boy up as a model. I have not alluded at all to one very serious side of the education question in America. The reason of the American boy's superiority in certain respects, I can quite believe, is the reason that was given—a young country, great scope, and keen competition. But I think it comes back to this; granted that the

public schools are not totally ignorant of these modern conditions, which we believe to be required, granted the fact that they are anxious to improve, we still have to face the question: Are they going to improve fast enough or are they not? Whether it is true or not one does not know, but more than once within the last few years it is said that the Empire has been right on the verge, I had almost said trembling on the verge, of a big international conflict, something before which the Boer War would have been child's play. If it is not true that we have been on the verge of war, at any rate we cannot have been very far off it; and that we have escaped what the Empire, under present conditions, is not ready to face, is what an ordinary man would call luck—have we any right to say Providence? I was very much struck by the strength of the opinion that the ideal training would be that in which vigorous and reformed public schools had universal military training right through them, and the argument that therefore we do not need specialised Cadet Schools. That sort of public school is the thing we need if we can get it. But whilst I heartily support that idea, I come back to this prosaic question: Are we going to get what is needed for the Army soon enough? I will not say: Are we going to get it at all? No doubt it would be a great comfort to us if we could drift along for some years without any fierce attack upon the Empire, which would shake us to the very core; no doubt it would be a great comfort to us, at the very extreme limit of our earthly existence, to see that in a few years' time education will be so efficient that there will be no question whatever as to the best material being available for military service. That is all very pleasant no doubt, but suppose a European war broke out the day after to-morrow, where are we? That is the question to think about. Therefore, I urge most strongly that one Cadet School, which would give us a centre of reference, handled by real thinkers, not in the least influenced by fashion or anything of the kind, would probably be the making of our public school education, in the thick of which are numbers of men who want reform, numbers of boys who would do far more than they do do if they only had the chance. A Cadet School of that kind I firmly believe would go a long way towards being a national insurance for us. Failing that, I believe we shall be carrying the insurance on our own shoulders, and not, if I may put it so, on a premium which would not cost us very much. I could say a great deal more as to the conditions and so on of the average boy in the public school. There is not, at this moment, enough of the best sort coming out of the public schools into the service, and I firmly believe we cannot get that best sort fast enough. Therefore, I urge that we not only need all the progress that can be brought into our public schools, and all the progress that can be brought into our Universities, but we need a definite pattern, and we need that definite pattern the day after to-morrow, if we cannot get it to-morrow.

The CHAIRMAN (Major-General H. D. Hutchinson, C.S.I.):—I am sure you will agree that we have listened to a most interesting lecture, and I am sure you will equally agree that the discussion which has followed it is full of instruction and suggestion, which I hope will bear fruit in many directions later on. I have very little to add myself to what has been already said by so many able speakers; I will therefore keep you only a very few minutes. With regard to the proposal to establish Cadet Schools, I must say that I have not made up my mind on the subject yet—I have an open mind. I have not, to be frank, given much thought to the subject before to-day, but I am not prepared, so far as I

can see at present, to say that a Cadet School is necessary. My own feeling is for free trade in the matter of the supply of raw material for the Army. I believe the present arrangement by which anybody can compete for the Army, from the public schools, from the Universities, from the Colonies, and so forth, is an excellent one, but I do not think at present it has quite a fair chance. But that is because we do not possess yet a great military training college, such as a great military nation ought to have. Sandhurst ought to hold at least double the present number of cadets. A cadet is supposed to be trained there for two years, and with the class of boy who now comes into the college, I think the training imparted in that time would make him a really first-rate officer. But if the cadets remain for two years at Sandhurst, the output of the College (which accommodates only 360) must be very small. Hence, a shortage of officers; so, in order to accelerate the output, we have had temporarily to reduce the period of residence and training from two years to one year. That is unfortunate. It is not fair to the cadets; it is not fair to the parents; it is not fair to the commandant; and it is not fair to the professors. Obviously, it is very difficult indeed to arrange a proper curriculum of study when you do not know whether the cadets will stay for two years, eighteen months, or twelve months. With regard to the Universities, I must say they have responded excellently, and with the best spirit, to the invitation and the encouragement which we have been able to give them from the War Office. Oxford and Cambridge are now sending up candidates to the Army of a good stamp, and Dublin also is furnishing good material. These three Universities have formed military classes, and are steadily registering undergraduates on their military lists. The whole scheme at present is quite in its infancy, but it is full of promise. Therefore, I think the prospect of getting good material from the public schools, from the Universities, and from the Colonies, is sufficiently good; and I doubt if a Cadet School is really necessary in addition to these sources of supply. I admit, however, there are many "precious possibilities" connected with the establishment of a Cadet School, and I should like to see the question further and fully threshed out. There is one passage in Mr. Tracy's lecture which I think is of great interest. He said: "The selection and treatment of bookwork subjects I purposely avoid discussing. I am anxious to speak of qualities rather than precise learning; of education rather than instruction. It may be said that such qualities and characteristics as have been indicated are largely a matter of temperament. I urge most strongly that the qualities of a man are largely a matter of training, far more largely than is recognised in practice, and that the attainment of a high common standard would bring special aptitudes also to a still higher point." I think that is a very important opinion, and I entirely agree with it. I think much more might be done at our schools, at our public schools in particular, to inculcate *habits* and *methods* of work. I think the methods and habits of work are of much more importance than the work itself. How few boys there are who really have learned how to approach their studies methodically. Industry is of little avail unless it is applied with method. That is the rule with all work, and I therefore think much more might, and ought to be done in schools to inculcate *habits of work*, and *method in study*. That is all I have to say, except that it affords me now great pleasure to ask you to accord a very hearty vote of thanks, signifying your wish in the usual way, to Mr. Tracy for the most excellent lecture he has given us.

Admiral the Hon. Sir EDMUND R. FREMANTLE, G.C.B., C.M.G. (Rear-Admiral of the United Kingdom):—I desired to say a few words in the course of the discussion, but there were so many speakers that I was not able to. I think the great problem we have before us, which Mr. Tracy has so thoroughly and capably dealt with, is that we desire to interest the boys in their studies, and at the same time not spoil their imaginative and receptive faculties. That plan is carried out in the United States more or less, and we endeavour to do it in the Navy at Osborne, by giving the boys a certain amount of manual training while they are carrying out their ordinary school lessons. That, I believe, is of the very greatest importance. It affords me very great pleasure to propose a vote of thanks to the Director of Staff Duties, who has been good enough to come here and support Mr. Tracy in giving us this extremely instructive and suggestive lecture.

MILITIA ENGINEERS, THEIR ORIGIN, DEVELOPMENT, AND FUTURE.

By Lieut.-Colonel H. E. M. LINDSAY, R. Mon., R.E. (Mil.). late R.E.

Thursday, 15th February, 1906.

Colonel L. B. FRIEND, Royal Engineers, in the Chair.

In 1877, when I was a young subaltern at the S.M.E., on the occasion of an inspection by H.R.H. the Duke of Cambridge, I was given the command of a company of engineers on Chatham Lines, of whom there were only some half-dozen who could understand English, and only one sergeant who was capable of translating from English into their own language—of course they all understood the ordinary words of command, but we did one of the annual "New Attacks" that day, and this required explanation. In five tries no one has ever guessed who these were, and the other day the best shot your Secretary could make was Hong Kong Submarine Miners. Really they were the Anglesey Militia Reservists, who talked Welsh! I believe that I was sent to that company because I was known to have played cricket for the South Wales XI. in London, and it was thought that I might have heard the language before. But these were prehistoric days before the advent of the School Board, and the monoglot Welshman no longer exists in the Royal Angleseys. This was my first introduction to Engineer Militia, but since then I have served with them for some nineteen years as adjutant, and as a regimental officer both at home and on service in the field. It is this long experience which alone emboldens me to appear before so distinguished a company to-day, and even then I could not have faced the music were it not for my anxiety that a little more should be known about a service to which I have devoted so large a part of my life, than there is at present, even among those from whom we try to take example, I mean the officers of the Royal Engineers.

At the present moment the R.E. Militia are divided into two distinct parts:—

1. What used to be called "Fortress," but which I imagine should now be called "Field" Engineers, which are represented by the Royal Monmouthshire and Royal Anglesey Militia; and
2. The submarine mining divisions.

I propose only to deal with the former, firstly, because I know very little about sub-marine miners, and secondly, because I am

supposed to be going to say something of the possible future of the R.E. Militia, and, as we now know, even if anyone else has a future, the sub-marine miner has none.

Now, as to the origin of the force. In 1877, it appears to have occurred to some Army Reformer that the Militia Army would look more complete on paper if it had engineers as well as infantry and artillery, and so—probably on account of the civil employments of most of the men composing them—the Royal Monmouth and Royal Anglesey Light Infantry were, by a stroke of the pen, converted into the Royal Monmouthshire and Royal Anglesey Engineer Militia, and thus were laid the foundations of a force of which—with a little assistance and encouragement from those in high places—I am sure much could be made. At first, the only alteration seems to have been the change of name, of uniform (as clothes became time expired), the arrangement that R.E. sergeants should be posted to vacancies as they occurred on the Permanent Staffs, and the appointment of a R.E. officer as adjutant. That this was all that was considered necessary is delicately hinted in an entry for 1877 in the records of the Royal Anglesey. It runs: "The regiment was ordered to train as engineers, but on its being pointed out that neither ground, instructors, storage for tools and materials, nor brushwood were available, they were allowed to train as infantry"; and it was the same with the Monmouthshire. The officers of the two battalions had not been consulted as to the change, and many of them keenly resented it; and this fact, coupled with the inadequacy of the provisions made, caused the position of the first R.E. adjutants to be one of great difficulty. However — fortunately in this case — the British officer is not accustomed to have what he wants drop from the skies without his asking, and asking more than once, for it, so that they refused to be discouraged, and bearing in mind the motto that used to face them in the dining hall at the old "Shop": "Unhasting yet unresting work," the first R.E. adjutants set to work to obtain what was absolutely necessary to instruct their battalions, and, soon gaining the confidence and assistance of the officers, every year saw something added to the efficiency of the corps, until after 30 years of work the two infantry battalions have become a collection of R.E. units, only wanting a little more encouragement and opportunity to become valuable auxiliaries to the much under-manned corps of R.E.

This reorganisation has, however, been only just accomplished, and the outbreak of hostilities in 1899 found us still two battalions of fortress engineers, organised as infantry battalions, and receiving no engineer pay, with no means of testing the trade capabilities of men enlisting, and therefore, no reliable roll of trades. Then came the embodiment of the Militia, and the engineer battalions saw infantry and artillery embodied, and, in some cases, sent out to the seat of war, while they themselves were apparently passed over. Urgent appeals were made to the War Office, with the result that a roll of trades was asked for. After much consultation between the commanding officer, adjutant, and company commanders, some sort of a roll was got out; but this was so manifestly unreliable that the R.E. Militia were practically told that, being neither fish, flesh, nor fowl, neither engineers nor infantry, there was no use for them, and they must possess their souls in patience.

Early in 1900, however, a request to each fortress battalion to raise a field company, in addition to its present establishment, gave an opportunity to raise the whole question of the organisation of the Engineer Militia, and a set of proposals was put forward by the officer commanding the Royal Monmouthshire, in which he pointed out the unsuitability of the present organisation, where units of which neither officers nor men had ever seen the interior of a fortress, and which were trained entirely in field engineering, were *called* fortress units, and suggested that the two fortress battalions should be converted into a number of units of field engineers, in which the tradesmen should receive engineer pay according to their skill at their trades, and that these units should have their definite places in the scheme of mobilisation.

This mobilisation, from which so much had been hoped, was destined to teach them nothing.

The suggestions of the officer commanding were, at the time, not entertained, and so keenly was the uselessness of their position felt by the officers of his battalion that a proposition was actually made in the course of the correspondence that as an alternative, they might be reconverted into light infantry, in which capacity they hoped to be allowed to render those services to their country which they feared that they were not to be allowed to give as engineers. After mature consideration, this was passed over.

In February, 1900, a section was asked for from each battalion to be attached to the Bridging Troops, R.E. in South Africa, and they sailed on the 21st. On the 1st May, 1900, both battalions of R.E. Militia were embodied, and their chance seemed to have at last come. Now, for at least one whole summer officers and men would have continuous training in the work of engineers, and so be fitted to take their proper place in the field when required. This was the dream—what was the reality? The Monmouthshire were sent to Aldershot, and employed in spade labour on a polo ground! Before the end of the month, in consequence of a request from the C.R.E., L. of C. and B., South Africa—who seems to have somehow heard that there were in existence such beings as Militia Engineers—the Monmouthshire and Anglesey were each asked to provide a company for service there. On 9th June these companies embarked, and on arrival, after being for a short time employed under the Engineer-in-Chief, were transferred to the Director of Railways, and converted into railway companies; later on, the Monmouthshire sent out a second company, so that the R.E. Militia were, after all, well represented in the South African Field Force. But although the Engineer Militia had the satisfaction of being well represented in South Africa, and although the fact that several of their officers and non-commissioned officers were mentioned in his despatches by the Commander-in-Chief caused them the liveliest gratification, this gratification was somewhat damped by the peculiar nature of the only reward meted out to them.

The reports sent home from South Africa by the officers of the Royal Engineer Militia fully bore out the representations which had been made to the War Office as to the need of a complete reorganisation if the Engineer Militia were to be made into a really efficient force, and, strengthened by these reports, the commanding officers at home were able to make out so strong a case (being also strongly represented

on the political side of the War Office) that by April, 1902, the old fortress battalions had been abolished, and the Royal Engineer Militia consisted of 2 field companies, 3 railway companies, 3 bridging companies, and 2 depôt companies, the eight former organised as companies of Royal Engineers at war strength, with full complements of officers and non-commissioned officers, all ranks receiving engineer pay. Now, at last, after a 25 years' struggle, the Engineer Militia had obtained, at any rate, a sound paper organisation, and the next step was to obtain what was needful to give officers and men the necessary instruction in their more technical duties. First, as to the field companies, classes were formed at Aldershot, and officers and drivers were sent there for instruction under the Royal Engineer riding-master, horses were obtained locally, and the full equipment of a field company was supplied by the Ordnance Department, with a result that, by the end of the first training, a very creditable show was made, and I think that the inspecting officer will say that the companies he saw at Monmouth and Beaumaris last year had attained to quite a considerable degree of efficiency. For the railway companies' instruction we were told that there was a considerable amount of old railway plant at Fort Scarsdale, outside Devonport, and I was sent down to find out how much of it was still fit for use. On arrival, I recognised old acquaintances in parts of the Suakim-Berber Railway, which I had met before in warmer climes. As a result of our search, we secured a light locomotive in good order, some pieces of trucks, some trolley wheels, and a considerable number of sleepers and rails, and the necessary fittings, all of which were carted to the Militia headquarters, and have proved of the greatest value for instructional purposes. Improvised workshops have been fitted up, and for maintenance and construction work, as well as the rapid repair of breaks in the permanent way or bridges (which is practically all they aspire to), the Royal Engineer Militia Railway Companies are undoubtedly useful bodies of men.

For the instruction of the bridging companies, we have the Rivers Wye and Monnow, as well as a fair supply of baulks and spars, and they live in hopes that they may eventually be provided with a complete pontoon equipment. But the Engineer Militia require a good deal more than they have at present to make them the efficient body of auxiliaries to the Royal Engineers that they could undoubtedly be made; they require the sympathetic and intelligent interest of the authorities; they require to feel that the Army, and more especially the corps of Royal Engineers, of which they desire to form a humble part, really wishes to make the best of them, and to make them useful, and not to feel, as they do now, that they are merely tolerated and looked upon as a nuisance, if nothing worse. I can, in my 20 years' service with the Militia, hardly recall one single improvement which has been the result of a suggestion from above; what we have got has been given to us "because of our importunity," just enough to keep us quiet for the time; and I have never felt as though any spontaneous effort was being made to make the Engineer Militia into really serviceable auxiliaries to the great corps to which they aspire to belong. This being the case, it may be asked: "What is it that you really want?"

First, we want sympathy; we want to be treated as men who are willing and anxious to give their best, but who have certain limitations as to time and opportunity, which must be recognised—

Militia Engineers are under no delusions. They know that while there are some parts of a Royal Engineers' work, in which they could, with a very little encouragement, be fitted to become really efficient helps to the corps, there are other parts to which (except in very rare instances) it would be absurd for them to aspire—for instance, for the work (in the field) of field, bridging, and railway (maintenance and construction) companies, they are, perhaps, with a little assistance, admirably adapted—for the locomotive or traffic departments of a railway, for telegraph, balloon, or search-light companies, I do not consider them fitted.

Secondly, we want for officers and non-commissioned officers every possible opportunity for improving their knowledge of their professional duties. For this purpose it must be recognised that it is quite impossible for men who have other work besides soldiering, to hold themselves in readiness to attend classes of instruction at a moment's notice; to be of any use there must be published, before the commencement of each year, a list of courses which are open to Militia officers, and there should be a guarantee that an officer will be received into any such class if he finds that he is able to attend; there should be a real examination at the conclusion of each of these classes, and an officer's pay should depend on his passing this examination. I cannot see why officers of Militia Engineers should not be allowed to join almost any class of R.E. Officers at the S. M. E., and if it is intended to make them efficient they must be allowed to do so. At present it is almost impossible for an officer of Engineer Militia to attend courses of instruction of the S. M. E. in military sketching and survey, though how a man can be expected to become an efficient engineer officer who is denied the opportunity of instruction in military sketching I quite fail to understand. In desperation, we are trying to organise survey classes during the annual training, but it will be readily understood that the withdrawal of a number of officers from regimental work, and the training of their companies, must be to the detriment of the general efficiency of the unit.

And, in this connection, I would suggest that the rules as to the qualification for promotion of officers be made rather more elastic—it is very important to have civil engineers as officers of R.E. Militia, and it is often quite impossible for them to qualify for promotion on the hard and fast rules now prevailing.

Thirdly, every encouragement should be given to good tradesmen to enlist—there has been in the past a great difficulty in obtaining men in the building trades, carpenters, masons, bricklayers, etc.—a great deal has been done towards meeting this difficulty by the recently introduced system of enlisting men who are tradesmen in January, February, and March, and letting them do their recruits' drill on enlistment, and, undoubtedly, the class of men in the Engineer Militia (as the advantages of engineer pay get more widely known), is improving greatly from year to year; but still more tradesmen are required, and every possible encouragement should be given to them.

As Militia companies are not employed "on the works" in time of peace, they do not require so many men of what I may call "fancy" trades as are found on the establishment of Regular R.E. companies; but a proportion of men of certain trades they must have: carpenters, masons, bricklayers, smiths, quarrymen, etc., for all companies; har-

ness makers and wheelers for field companies; rivetters, platelayers, engine drivers, firemen for railway companies; boatmen for bridges, etc.

Fourthly, occasional training of Militia units with their corresponding R.E. units. For instance, the field companies should at intervals—not every year, by any means—train with the R.E. at Aldershot, or take part in manœuvres; the railway companies should be employed with the R.E. railway companies in some practical work; and the bridging companies should be sometimes sent to join the bridging battalion R.E. during its summer practice. This was to a certain extent done in 1905, when the "bridgers" trained at Monmouth, and by the kindness of Major Travers, the bridging companies of the Monmouthshire were allowed to work with them, with most satisfactory results, so far as the instruction of the Militia was concerned.

The above suggestion would entail less expense to the public than the old system of triennial trainings of each whole battalion at Chatham.

Fifthly, enlistment for foreign service. We want to be enlisted for foreign service in case of great emergency—in fact, on just the same lines as the old Militia Reserve. It has been said that this would adversely affect recruiting, but in my experience the fear of foreign service never prevented one of our men from joining the old Militia Reserve, and I do not see why it should prevent men joining the Militia—indeed, it would, I feel sure, by improving the status of the Militia, make men more eager to join.

And I should like to see the time of preliminary drill increased to six months. A man who joins for two months would probably rather join for six months straight on end, especially if his attendance at subsequent trainings was made more elastic. This would, I am confident, be very popular with the skilled workman, who could much more easily arrange for six months on end, with the knowledge that he could choose which of the next two or three trainings he should come out for, than he could manage to be away from his civil employment for two months in perhaps the best part of every year of his service; and it would also be for the good of the country, for such a man, once he had had six months' consecutive training as a soldier and in field works, would still be an efficient sapper, even if he were to miss two or three trainings during his term of service.

The above are real requirements; but after all, the first would at once bring the others with it. Sometimes I have wondered whether the corps of Royal Engineers really want us to improve; whether the idea has not sometimes passed through its mind that if the R.E. Militia becomes too efficient, and a cheeseparing Government comes into power, it may not be suggested that the corps should be reduced by some units, whose places could be taken by Militia. But surely, such a fear, if it ever has occurred to anyone, must be without any good grounds. Never has there been a war of any magnitude in which we have had enough engineers, and surely it would be better that your auxiliaries shall come from—so to speak—your own flesh and blood, than that it should be necessary to call in outsiders to your assistance, and so deplete other branches of the service.

At present, therefore, we have at Monmouth one field company, consisting of 1 major, 1 captain, 4 subalterns, and some 240 non-commissioned officers, sappers, and drivers, with horses, wagons, and

the full equipment of an R.E. field company; and at Beaumaris another field company of similar strength. The drivers drive well, and among the sappers there is an ever-increasing number of tradesmen. These companies were stated, by the R.E. officer who inspected them last year, to be fit to take their place alongside of the R.E. field companies, and, undoubtedly, after a very short embodiment, they would be so. Then at Monmouth we have two, and at Beaumaris one bridging company, of which officers, non-commissioned officers, and sappers are well trained in the construction both of floating, spar, and of trestle bridges, and a good proportion of the men being in civil life, sailors, boatmen, dock labourers, etc., are well suited to the work they have to do. These companies have an establishment of 1 major, 1 captain, 4 subalterns, and 180 non-commissioned officers and sappers each. Of the same strength are the railway companies, of which there are also two at Monmouth and one at Beaumaris. These, which would be more properly called construction and maintenance companies, as they only aim at having enough drivers and firemen to run their construction trains, are likely to prove particularly useful bodies of men, being well-trained in work on the formation level, rapid plate-laying, points and crossings, the repair of and construction of culverts and heavy bridges, and, with a little time after embodiment, would form a very efficient part of the railway corps of any Army.

I cannot conclude without saying a word on the subject of non-commissioned officers, because my experience of our non-commissioned officers on service—and I suppose it is efficiency "on service" that we really require—makes me think that the hopeless way in which some commanding officers talk of their Militia non-commissioned officers is, to say the least of it, much exaggerated. In my company in South Africa I had one C.S.M. who was also pay-sergeant, a duty which, to a great extent, deprived the company of a C.S.M., and I had only one other permanent staff-sergeant. Soon after arrival I was made officer commanding railway troops, O.F.S., which meant that some 200 men of every conceivable corps, Regular and Irregular, were put under me for pay, rations and clothing. I already was in charge of the maintenance and reconstruction of the 400 miles of railway in the Orange Free State. I then had to make my second permanent staff-sergeant, sergeant-major, quartermaster-sergeant, and pay-sergeant of railway troops, all rolled into one, thereby depriving my company of his services. My own company was generally divided into four sections, each stationed at some point on the 400 miles of railway, which was under my charge (and which was for nine months badly damaged by the enemy at some point on an average once every three days!), so that it is evident that I had to rely almost entirely on my Militia non-commissioned officers, and the result showed that, at any rate with us, he is not such a hopeless person as he is sometimes painted.

If Militia non-commissioned officers were given every opportunity of joining classes of instruction; were allowed to be called out whenever recruits of their unit were up for P.D.; and if the sergeants were treated in every way as the equals of the sergeants on the permanent staff, I think that they would be found to be very useful and

reliable non-commissioned officers, especially if it were possible for a proportion of the best of them to be selected to fill vacancies on the Permanent Staff.

In conclusion, I can only reiterate my statement that our ambition, as Militia Engineers, is to be permitted—in times of stress—to come to the assistance of the Regular units of the great corps of Royal Engineers, and we ask that—in order that we may be fit to do this—we may be given all possible opportunities of improving ourselves, now, before such time of stress arrives. In the past I have feared that those opportunities would never—at any rate, during my time—be given, but during the last six months we have been vouchsafed so much encouragement from those in high places, that I now look forward, with some degree of confidence, to a bright future for the Royal Engineer Militia.

One word more, not specially connected with the Engineer Militia, but on a subject which came home to me very forcibly during my time in South Africa, when I was continually moving from one garrison on the railway to another, stopping perhaps at a post where an attack was hourly expected, and where I often appeared to be the senior officer. It is this: That if the Militia is to be employed at any time with Regular troops on active service, the abolition of honorary rank is absolutely necessary. The confusion caused by the advent of a combatant officer with badges of rank superior to those of the officer commanding any post or garrison, but who is in reality that officer's junior, must some day, if the system is not altered, lead to a serious disaster.

In conclusion, I can only apologise for the extremely inadequate way in which I have dealt with what I believe to be a most important subject; but I still hope that the discussion which may follow what I have said will be fraught with much benefit to the branch of the Service whose interests I have so much at heart.

Colonel the Lord RAGLAN, Commanding the Royal Monmouthshire Engineers (Militia):—I am in most thorough agreement with practically everything that has fallen from Colonel Lindsay. All the questions he has raised, and the points he has driven home with regard to our unfortunate position for many years — our infantry organisation and our name of sappers—have been apparent to me for a long time, and I, in common with others of both regiments, have struggled against it until at last we have been put into what I think is the right and proper place. There are certain points having a bearing upon the subject of the lecture which Colonel Lindsay, in his modesty, failed to deal with, but which I think really ought to be brought home. I may say, with all the more confidence because I myself was not in South Africa, that there was a large amount of very excellent work done by the officers and men of the Engineer Militia in South Africa. Colonel Lindsay has alluded very briefly to the number of breaks in the line which his own company repaired; but he has said nothing about the bridges of which they were able to re-rivet girders and so forth on the veldt, and many bridges were reconstructed entirely by men of the Royal Engineer Militia. If that could be done in those days, when our men were not supposed to have any trades, and when they did not get engineer pay, how much more might be done if some trouble and money were expended in getting tradesmen to enlist in these regiments? With regard to rewards, amongst non-commissioned officers selected in my own regiment for reward was a

junior lance-corporal, who was given a distinguished conduct medal, although his company was out there for a less time than any other. Why that man should have been selected I do not know. An officer in my regiment, a major and an honorary lieut.-colonel in the Militia, was the only officer rewarded, and was promoted from the rank of captain to that of major in the Reserve of Officers, and it was distinctly stated in the Gazette that it was not for service in South Africa, whereas almost the entire period of his embodied service was passed in South Africa. This was the only reward given among fifteen Militia Engineer officers who served with Royal Engineer units in South Africa, besides many officers who served with other units—the Remount Department, and so forth. Another point with regard to officers should be driven home, and that is, the question of their being allowed to attend classes when they can. An officer of Militia has his own business or his own pleasure to attend to, and he must do the classes not when you want him to but when he can, and it is therefore essential that all classes should be held on fixed dates, known for some considerable time beforehand, and that every officer should be able to attend when he wishes. The rules for promotion have proved too strict. It was fully understood in the War Office at the time they were drawn up that they were really rather more a counsel of perfection than rules which would be rigidly enforced. The difficulty of attending all these classes is very great, and I consider that less rigid rules should be adopted by which officers who have *bonâ-fide* endeavoured to make themselves as far as possible efficient should be recognised and their promotion given to them. Colonel Lindsay is in favour of preliminary drill being increased to six months. I am not quite sure that I am with him in that. Of course, it would be an enormous advantage from a training point of view, and no doubt, as he pointed out, it would be more convenient for a tradesman, who could come and do six months' drill instead of being tied down to coming out every year at certain periods. But I should be rather afraid of increasing the preliminary drill to six months all at once; I would rather increase it gradually, say to two months now, and then three months, and see whether that would have any effect upon the class of men we get or upon the number of men we get, before going any further. Recruiting is a very curious and ticklish matter to touch, and any sudden change of that sort might have a deleterious effect upon recruiting. One point which Colonel Lindsay has not brought out with regard to Engineer Militia, namely, that a Militiaman for the greater part of the year is engaged in prosecuting his trade, and is likely to be a more practised tradesman than a soldier in the Royal Engineers, who is away from his trade, whose living does not depend upon it, and who in many cases has no opportunity of practising it perhaps for several years at a time. There is only one other point I want to mention, and I am glad Colonel Lindsay had a dig at it, that ridículous system of honorary rank. It is the greatest possible farce. It makes for immense confusion, and in my humble opinion it throws great ridicule upon the Militia. It is a matter I feel very strongly about, and I have tried to struggle against it for a great many years. With regard to enlisting the whole Militia for general service, I have strongly advocated it for many years, in this place, in Parliament, and elsewhere. I think the present system is absolutely indefensible. You enlist a man for home service only, and the moment there comes a crisis you put a pistol to his head and say: "Volunteer to go to the war." To my mind it is not business. Either say to a man that, under no conceivable circumstances should he go abroad,

or else frankly enlist him for active service in any country where he may be wanted in case of war. I have not the least fear that you would lose a single man, and I have been strengthened in that idea by a Militia colonel who commands a purely agricultural battalion. He was convinced that general service would not affect recruits, but was afraid that it would prevent married men re-engaging. He told his adjutant to ask every man re-engaging whether he would have any objection to re-engaging if there was a liability for foreign service, and every single one said he had no objection whatever. I am sure that if all Militiamen were enlisted for general service it would have the effect of raising the position of the force, not only in its own eyes, but also in the estimation of the country.

General Sir RICHARD HARRISON, G.C.B., C.M.G. (Colonel-Commandant Royal Engineers) :—I came here this afternoon not intending to say anything, but simply with the object of hearing what my old friend, Colonel Lindsay, has put to this meeting so well. There is one point I should like to allude to with regard to the remark he made, that the Engineer Militia had worked out their own salvation, as far as it had gone, without any sympathy or any support from those in authority. I do not think he was quite behind the scenes when he said there was no sympathy amongst those who were in authority; I can certainly speak for one who has for many years believed in the future of the Militia, and who has not only expected but has thoroughly believed that a great deal more could have been done by the Royal Engineer Militia than was done previous to the time of the South African war. I do not wish to go into details, and will content myself by saying that by many blows you can knock a long nail into a wall. Several blows have been given already to the head of the nail representing the Engineer Militia. Go on hitting that nail with blow upon blow, like the blow that has been given this afternoon, and eventually those who are in authority over the Army of this great country will realise that the Militia is the backbone of the Army, and that it is capable of being improved and made the very centre of our Army organisation. With the Militia, the Regulars, the Volunteers, and the Yeomanry, properly organised and carefully trained, Great Britain ought to have an Army with which she can calmly face the world. I will conclude by saying how much I have appreciated the lecture that Colonel Lindsay has given to us this afternoon.

Lieut.-Colonel C. H. L. BASKERVILLE, Falmouth Division Submarine Mining R.E. (Mil.) :—In the few remarks which I propose to make I should like to allude to what the lecturer said in commencing his address, when he told us he was not going to deal with the branch of the Engineer Militia to which I belong (the Submarine Miners), because, first, he knew nothing about them, and, secondly, if anybody else had a future, the Submarine Miner had none. I am quite sure the lecturer will agree with men in hoping that he is not quite correct, and that his prophecy may not be fulfilled. Possibly as Submarine Miners pure and simple our service may have no future, but there are other duties that devolve upon those whom, for want of a better name, I must call the Submarine Miners, the most important of which is that of maintaining and working the electric lights connected with our coast defence. The Submarine Mining units of the Regular forces are now merged in the ordinary fortress companies of the Corps of R.E., but the duty of maintaining the electric lights and working them is still in their hands. I venture most sincerely

to hope that some form of organisation will be devised which will similarly continue to the country the services of the Militia Divisions, and I am sure the representatives of the Submarine Mining Militia that I see around me will join with me in that hope. Taking the question of trades, this is neither the time nor place to go into details of the organisation of our Divisions; but, speaking for the Division which I have the honour to command, we have hitherto found little difficulty in obtaining a considerable proportion of those trades which are necessary for Engineers. And where we have not been able to get quite the proportion required we have from time to time found ourselves able (having the right material) to train to a large extent our own men in the special duties they are wanted to perform. Especially was this the case during the long embodiment of 1900, to which the lecturer has alluded. Of course, I do not say for one moment that we can expect the men of the Submarine Mining Militia to become experts in the technical details of electric light work; that, from the conditions of their training, is not practicable. But we have been able, in my Division at any rate, to train them to take their part in what I may perhaps call the general duties of electric lighting. A body of men, recruited as our men are from suitable trades, is bound to be most useful in any coast-defence organisation. Again, therefore, I hope that some means may be found to keep them in the Service. I am in thorough agreement with most of the propositions for his own service that the lecturer laid down. With regard to a great many of the points which he mentioned as *desiderata* for Militia Engineers, I may say that in the Submarine Mining Militia we have had those advantages for some years. We have not had a six months' preliminary drill, but we have had seventy-seven days' preliminary drill and fifty-five days' training straight on end, so that a man was enlisted practically for several months' service, and had many other opportunities of employment subsequently. We have had practically all the non-commissioned officers we required, or who wished to come up, during the preliminary drill. I will not say generally that we have had as much as we should have liked, because probably that is a state to which we can never hope to attain in this world, but we have had very considerable facilities for the instruction of our officers, non-commissioned officers, and men. An ounce of practice is worth a pound of theory, and the result of this has been, if I may be permitted to say so, that the Submarine Mining Divisions have been able to take their place as integral parts of the organisation for coast defence. They were as essential to the complete scheme of coast-defence organisation as the Royal Engineer units themselves. In my twenty-five years of Army and Militia service I have never met with a more efficient, more useful, and more generally capable body of men than the Submarine Miners of the Corps of Royal Engineers. I have not much experience of other branches of the Militia, but I am perfectly sure I am justified in saying that the Militia divisions of the Submarine Miners will compare as favourably with other branches of the Militia Service as their comrades in the Corps of Royal Engineers with other branches of the Regular Army.

Major F. H. RAWLINS, late Anglesey Militia:—As I had the honour to go out in command of the Anglesey Militia Company at the same time as the Monmouth Militia, I wish to endorse Colonel Lindsay's words with regard to the Militia Volunteer non-commissioned officer. Four months before we came home we lost our chief staff-sergeant, who was paymaster, and we had to get along as best we could without him. During

the last part of our time we were entirely under Militia Volunteer non-commissioned officers, and I think it speaks very well for the Militia sergeants that they were able to manage the men on active service without the aid of the permanent staff.

Colonel H. E. MORGAN LINDSAY, in reply, said:—In reading the Militia Regulations I have always envied that part that applied to the Submarine Miners, and have always considered that if only the Field Engineers could be treated by the authorities in the generous way that the Submarine Miners have been, we should hope to have some chance of equalling them. As to what I said about the future, please let me explain that my own words were: "If Secretaries of State for War are to be believed, there is no future for Submarine Miners." Those words, for some reason or other, were expurgated; I was told I had better change them, as perhaps they would not be liked. I had to give some reason for not talking about the Submarine Mining Divisions, and that was how I managed it. Sir Richard Harrison spoke very kindly, and I must apologise to him for that expression. Sir Richard Harrison inspected us when I was adjutant, and I have been to him when he was at the War Office, and when we were struggling to get our scheme for reorganisation before the war. I never failed to find sympathy in Sir Richard Harrison, and I am quite certain he always had the greatest sympathy for us, and if everybody had had the same, what we desire would have come long ago. I was quite prepared to apologise to everyone who spoke, but I am not going to apologise to my own commanding officer; I shall have to do that afterwards—probably in the orderly-room. I thank you very much for the kind things you have said about my lecture. My only hope is that it might be just another stroke on the head of the nail which we want to drive into the minds of the authorities so as to get them to give us what we require.

The CHAIRMAN (Colonel L. B. Friend, R.E.):—I think you will all agree with me that we have heard a very interesting lecture. The author confessed it had been a hard struggle, and told us a great many of the details of the struggles they went through; but I do not think you could have expected to have this branch of the Service suddenly developed into Field Engineering Militia, and in spite of the hard struggles it seems to me from what we have heard that they generally got what they wanted in the end. Sir Richard Harrison spoke about Colonel Morgan Lindsay accusing the Corps of Royal Engineers of want of sympathy, and of not giving sufficient encouragement, and I am sure I am quite at one with Sir Richard Harrison in saying that the sympathy was most deeply felt, certainly by all those I was most intimate with, and we were only too anxious to give encouragement. It was a difficult thing in many ways to show this sympathy and give this encouragement when you remember that the Royal Engineer Militia in Monmouthshire and Anglesey are rather in isolated spots. Up to recent years they had their training in one block, sometimes at Chatham, but in other years they were in their own place in Wales. If the Militia is to be developed in its present organisation in field companies, bridging companies, and railway companies, there is no doubt in order to obtain an efficient training these companies will have to split up and work in combination with other troops at Aldershot, Bordon, and wherever training was going on. To be efficient, in my mind the training of the bridging companies and the field companies must go on in contact with other troops; it is no use

training a unit by itself in those things. As far as the difficulty of getting officers and non-commissioned officers to the classes at Chatham is concerned, it must be remembered that those classes are very overcrowded, and that the programme has to be drawn up a long time in advance. If vacancies occur, by officers and non-commissioned officers of the Regular Forces dropping out, then the chance comes for the Militia officers to be taken in, and sometimes it is almost impossible to avoid giving very short notice. Colonel Lindsay dealt with several points at the end of his lecture, amongst them being the liability to war service, the extension of the preliminary drill to six months, the alteration of the honorary rank; but I think all those questions do not come so much into the Engineer Militia question as into the general question of the Militia of the whole country. There is no doubt that if, as many of us hope, the Militia forces will eventually become the main body of the whole Army, those questions will be settled in the way that Colonel Lindsay hoped. I think I am right in saying that I am speaking for everyone here when I ask Colonel Morgan Lindsay to accept our very hearty thanks for the trouble he has taken in writing the lecture and coming here to deliver it.

THE RUSSIAN INFANTRY SOLDIER.

By Major M. M. MACOMB, General Staff, U.S.A. (late Attaché with the Russian Army in Manchuria).

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SPLENDID fighting material! Such is the unanimous verdict of foreign officers who have watched the Russian soldier campaigning in Manchuria. It is our purpose now to speak particularly of the infantryman who bore the brunt of the great battles, fought hardest and suffered most, and to follow him from mobilisation in Russia to bivouac and battle in the Far East. It may be well first to call attention very briefly to some points concerning the military system of Russia. With certain exceptions, the law requires personal military service of the whole male population without distinction of rank. A man's liability to service extends from the beginning of the 21st to the end of the 43rd year, of which the first eighteen years are passed in the regular standing army, and the remaining five in the Opolchenie or Militia, which is called out only by imperial ukaz due to extraordinary circumstances in time of war. Service with the colours lasts four to five years, leaving a period of fourteen or thirteen years to be served with the reserve, during which period there is liability to two trainings of a few weeks each.

The regular land force is composed of two distinct parts:—

1. The active army, troops actually under arms with the battalions or regiments, recruited from the annual contingent.
2. The reserve, composed of men who have served with the colours and are allowed to remain on indefinite furlough, but are kept under military control with the special object of having trained, disciplined soldiers immediately available to fill the units of the standing army to war strength when mobilisation is ordered.

Turning to an Army List of about the date of the outbreak of hostilities to form some idea of the infantry organisation, we find recorded 208 regiments of infantry (12 of the Guard, 16 Grenadier, and 180 of the line). The guard regiments are not numbered, but are distinguished by titles only, the Grenadiers are numbered from 1 to 16, and the Line from 1 to 180. There are 4 battalions to a regiment, numbered from 1 to 4; four companies to a battalion, numbered in sequence in the regiment from 1 to 16, with a non-combatant company not numbered. These regiments are organised permanently into divisions, thus: One division = 2 Brigades = 4 Regiments = 16 Battalions = 64 Companies. These Line divisions are numbered in sequence from 1 to 45, the 1st Infantry Division being composed of the 1st, 2nd, 3rd, and 4th Regiments, etc.

Besides the infantry proper there are the so-called Rifles which are supposed to be composed of a better class of recruits and to be better shots. They are considered light troops and officers and men seem to think it a distinction to belong to a rifle regiment. Of these there were:—

20 Rifle regiments (Nos. 1 to 20) of 2 battalions, each forming the 1st to 5th Rifle Brigade of 4 regiments each.

8 Finland Rifle regiments (Nos. 1 to 8) of 2 battalions, each forming the 1st and 2nd Finland Rifle Brigades.

36 Regiments of East Siberian Rifles of 3 battalions, each forming the 1st to 9th East Siberian Rifle Divisions.

4 Guard Rifle battalions and 1 Guard Rifle regiment, forming the Guard Rifle Brigade in time of peace.

8 Caucasian Rifle battalions.

20 Turkestan Rifle battalions.

8 Transcaspian Rifle battalions.

6 West Siberian Rifle battalions.

6 Kuban plastun battalions (Cossack Infantry), expanding in time of war to 18 battalions.

Without attempting to go into details we may say generally that when mobilisation is ordered the peace footing of from 450 to 600 men per battalion is increased to about 1,000 men by calling in the reservists to the ranks. There is also formed at this time for each regiment of infantry, and each rifle brigade of 4 battalions, a Depôt battalion, by detailing from their strength a field officer, 6 other officers, and 40 men as a cadre to be filled up as soon as practicable.

Reserve Infantry.—This consists in time of peace of a certain number of cadre regiments and battalions officered from the active list and recruited in the ordinary way from the annual contingent. These cadres appear on the army list under the heading "Reserve Regiments and Battalions," numbered in regular sequence after what we have already referred to as active regiments. They are simply bodies of trained troops on which to form full-fledged regiments, brigades and divisions on a war footing. Divisions so formed are no longer called "reserve" troops, but appear on the roster among the active organisations. These expanded reserves have a very much larger proportion of green men and untrained officers than an "active" organisation just mobilised, and require training. These reserve organisations double or quadruple themselves on mobilisation. There were 56 regiments and 52 battalions of reserve infantry grouped in 26 reserve brigades, viz.: 17 European (Nos. 46 to 62), 4 Caucasian (Nos. 63 to 66), 2 Turkestan (Nos. 1 and 2), 3 Siberian (Nos. 1 to 3).

Fortress Infantry.—Stationed in peace in the fortresses it would hold in war. Organised like the reserve infantry and expands in a similar manner for war.

Local Infantry.—Stationed in remote portions of the Empire and intended for local duties only.

Depôt Infantry.—Organised in time of war in battalions or companies to supply wastage in units of the Active Army.

Royal Militia Infantry.—Organised in war on small cadres (selected from units of the Active Army) maintained for the purpose.

From the preceding memoranda a general idea may be formed of the Russian military system, the organisation of the infantry and the kinds of troops classed under that head.

To summarise we may say that Russia, with a population of about 140,000,000, supports in time of peace an army of about 42,000 officers and 1,100,000 men, mobilisable to 55,600 officers and 2,800,000 men, requiring about 600,000 horses. The annual contingent of recruits is over 300,000 (in 1904 over 400,000).

The total number of troops of all kinds scattered over the huge territory east of Lake Baikal, at the disposition of the Viceroy, when the war broke out, has been estimated at a maximum of about 2,800 officers and 150,000 men, of which 86,000 were infantry.

We will now give a few notes relating especially to the infantry soldier in the war.

Mobilisation.—Let us suppose that mobilisation of a division of infantry of the line stationed near St. Petersburg has been ordered.

The various regiments will each proceed to the rendezvous for receiving reservists, establishing headquarters at points near the railway to Moscow. The battalions will be quartered in the nearest villages if it be winter, and officers detailed for the purpose will receive the reservists at regimental headquarters and send them in squads to the battalions. Here they will be assigned to their companies and the battalion commanders will organise the service life and prepare programmes of instruction. The reservists having had no special training since they left the colours have forgotten much, and while they pick up their company drill fairly soon, it takes a long time to freshen them up in map reading, orientation, and scouting work. The oldest reservists are the worst. They have formed family ties, and are loath to exchange home life for the hardships of war. There was never time enough to get these soldiers fully up in their work, but they were, as a rule, willing, good men, and the old non-commissioned officers were faithful workers and a great help to their superiors.

Departure for the Orient.—The day of leaving having arrived, the men are entrained by battalions in freight cars prepared for the purpose. These cars are 9 by 21 feet inside, are furnished with a heating stove placed in the centre, two plank platforms and a shelf at each end, in which the men sleep. There are two lanterns for illumination, while four small glazed windows give light during the day. On each car is the inscription, "40 men, 8 horses," and an inventory of its contents. Perhaps the men complain of being crowded, but they get little satisfaction. The station-master will say: "What's all this fuss about? You are well off! Only 40 men, and you see by the rules there are still 8 horses to come. Any more growling, and in they go!" The men laugh at this joke and crowd in as best they can.

For long journeys 40 men is entirely too many for such cars, but as rolling stock was in great demand there had to be from 36 to 38 in each. Whenever possible, battalion commanders would get an extra car or two for messing, in which they would have the field kitchens set up. This was a good arrangement as it enabled the men to get their meals regularly. When this was not possible the men had to eat when they could at such eating stations as were avail-

able, regardless of the hour, day or night. The meals at these places were good enough, consisting generally of two dishes, generally porridge and soup. The men had a ration of tea and sugar, and were able to get hot water for tea-making at most of the stations

Some battalion commanders had their men study the field service regulations on the way, and gave them instruction in "first aid." The battalion doctor would organise a litter bearer drill during long halts, so that the sanitary men and litter bearers were all well up in this and dressing wounds before arrival at the front.

Considering the discomfort of these journeys the behaviour of the men was remarkably good. There was very little drunkenness, and that would generally be at the beginning—before leaving Moscow.

I saw numbers of the outward bound troop trains and the men seemed always cheerful and in fine health. As no facilities for bathing existed along the route the men became infested with parasites of various sorts—as might be expected from the crowding. But the Russian soldier seems to be able to stand all sorts of inconveniences which would make our men almost mutinous. Perhaps he lacks the imagination necessary to think himself worse off than he really is.

The principal sanitary defects I noticed along the line were:—1. Failure to provide bathing facilities; and 2. Failure to construct sufficient or proper latrines anywhere for the travelling troops. The result was a very foul condition of the soil around all the stations.

Bivouac.—The long journey across Siberia has taken from 30 to 36 days, and we will suppose that the season is September, before the battle of the Shaho. At that time the last arrivals formed part of the army reserve and were bivouacked in shelter-tents on the plain south of Mukden.

There was much work to be done in the bridge head forts south of the Hun River, and the battalions were sent by turn to work with the sappers on the fortifications. The men do not mind this sort of work; the Russian soldier takes kindly to the pick and shovel. Companies not engaged in sapper work were drilled in marching and in finding their way through the kowliang; also in night marches. Each company in turn was given the duty of guarding the bivouac against "Hunhuses." There were none about, but as there were no Japanese near, it gave reality to the service of security to imagine an enemy.

The troops live well enough, but it was not possible to supply them just at this period of the campaign with a full supply of black bread. So the men improvised ovens and baked cakes on covers of cans, sheet iron or anything available. They had plenty of vegetables, however, as the fields were full of potatoes and cabbages.

Each regiment has 150 to 200 head of beef cattle following it and grazing is found for them in the fields, so that the materials for good meat and vegetable soup were available. Fuel was scarce, but was obtained from the Chinese, and by cutting down groves about villages in the line of fire, or by sending detachments to the mountains in the east.

The officers had their own field kitchens and sent to Mukden City or to the Officers' Co-operative Stores at the station for supplies.

The regimental horses were furnished with about one-fourth their ration of barley, but this was eked out with bean-cake, chumsia, and kowliang. It is necessary to depend almost entirely upon the country for forage.

We may say truthfully that officers and troops lived well in these bivouacs, and that the only sickness of any account was bowel-trouble, due to their own recklessness.

The men could not be restrained from gorging themselves on radishes and cucumbers which grew in abundance near by. This, combined with the hot days and cold nights (Max. 96° F—Min. 35° F), gave them dysentery.

I should say also that the sanitary conditions about the bivouacs were unnecessarily bad, for it was not customary to have sinks but to let the men go about where they pleased, resulting in a filthy condition of the ground about the camp. The constant use of tea, their nutritious and wholesome black bread and their soup kitchens, all tended to keep the men in fine health in spite of their neglect of camp sanitation.

When the bread ration is short and the men have to bake cakes themselves to make up for it, they will, if not watched, eat up their biscuit ration which the regulation requires to be always kept in their haversacks for emergencies. The only way to prevent this was by frequent inspections. This "biscuit" is simply the black bread broken up and thoroughly dried, when it becomes very hard but does not lose its nutritious qualities. The Russians call it "sukhari."

The men were by no means absolutely dependent upon the company kitchen but were able to do their own cooking when required. The individual boiler makes this easy, as by combining together by fours a meal of porridge, soup and tea could be very conveniently prepared. The Russian soldier took to this naturally, and was able to prepare tea for himself even in the trenches. General Kuropatkin urged upon all the necessity of giving one hot meal a day to the men in the "positions." In certain localities the field kitchens could be driven down under the cover of darkness, near enough to let a detail of men fill their individual kettles. Where this could not be done the soup was transferred to kegs and carried by small donkeys right up to the trenches. Many regiments had water kegs fitted to these little animals and found them very convenient in the hills.

There was no regular issue of preserved meat, but whenever possible tinned beef of excellent quality was furnished to men who were away from their commands on special duty, which prevented their getting cooked rations.

Inspection by Commander-in-Chief.—At every opportunity General Kuropatkin would personally visit the bivouacs. He would make a short speech to the troops after reviewing them, praising them if their appearance was good, and explaining to those which had not met the enemy the difficulties which had to be overcome, and that he reposed confidence in their ability to render a good account of themselves. He would note any failure to care for the comfort of the men in going through the bivouac and would suggest what should be done. After this he would call the officers around him and explain any defects noted in the battle tactics during the campaign and give all the latest news of the enemy and the best way to advance, take cover, and retire.

He would also urge the officers to do all in their power to keep the bivouacs cheerful, suggesting that the bands be required to play every day, and the men encouraged to sing songs. Conditions were always bettered by these visits of the Commander-in-Chief.

Winter Quarters.—Upon the approach of cold weather orders were given to put the whole army under suitable shelter. The countryside being dotted with innumerable farmsteads and villages, all those in the battle-zone being abandoned, it was possible to utilise the empty houses for the General officers and the various staffs. For the rank and file it was necessary to construct *zemlyankas* or dug-outs. These shelters nearest the front filled the double role of quarters and splinter-proofs. For a week the soldiers burrowed like prairie dogs, and by the middle of November were all underground.

The troops detailed in the fighting force and taking their turn in the trenches did not try to build elaborate huts. The simplest were constructed thus:—A rectangular pit about 4 feet deep by 9½ feet wide and of varying length would be excavated. Along one side of this pit a trench about 2½ feet wide by 15 inches deep would be dug, leaving a bank 7 feet wide, on which the men could sit or sleep, the trench itself serving as a passageway, to which steps were cut either at the ends or sides. The roof was made by placing rude rafters across the pit, placing upon these a layer of kowliang stalks about a foot thick, and then throwing the excavated earth over all. Rough matting made by the Chinese from kowliang stalks was used to line these structures. Chimney pots were made from the big earthern jars found in numbers in every Chinese homestead, from bricks, or from old oil cans. The timber for these earth-huts came from the groves around every village and the Chinese graveyards, so that by the time they were completed the countryside was bare indeed.

Owing to the cold dry Manchurian winter which kept the ground continually frozen, these "burrows" were not unhealthy. They were warmed by rude but efficient stoves, ingeniously constructed of brick. Some regiments in the Army Reserve had time to lay out little villages with streets, battalions being grouped together. The *zemlyankas* here were much more elaborate than those described, and were better lighted and ventilated. The company streets were marked out with little pine trees, and during the holidays and regimental fêtes made gay with bunting. Christmas presents in the way of tea, sugar, tobacco, and writing materials began to arrive from home for the soldiers, and some company commanders got up Christmas trees where every man got something. Even in January it was possible to have open air entertainments, where men and officers sang and danced, and even visiting attachés might perform. There was plenty to eat and drink; the Mukden markets were full of frozen pork, venison, pheasants, and vegetables; and large quantities of frozen beef were brought in from Siberia.

The troops were kept at work improving the old roads and opening new ones to facilitate all the various operations going on in the rear of the army. The infantry "on the position" faced the enemy, sometimes only a few hundred yards away, and occupied themselves with small night forays, in which some stores would be destroyed and a few prisoners taken; while the artillery did some sniping on a large scale, but with small net result. Thus the time was spent during the long wait between the battle of the Shaho and great events around Mukden. From what has preceded, a general idea may be formed of the soldier's life *en route* and at the front. It will be interesting next to present some data concerning his arms, equipment and clothing.

Clothing.—The vicissitudes of a campaign in Manchuria brought to light certain defects in the uniform and showed the necessity of a special campaign dress. Normally the field uniform consists in a double-breasted, buttonless tunic of dark green cloth, with soft standing collar; dark green cloth trousers, loosely cut and habitually worn inside of high boots; a round forage cap of cloth to match the tunic, with short patent-leather peak. The cap is piped with red around the top, and both edges of the band, the band itself being red, light blue, white, or dark green according to the number of the regiment in the division. The same sequence of colour follows for the patch on the collar of the blouse and that on the collar of the overcoat. The number of the regiment was worn on the cap band and of the division on the shoulder piece, which was of red cloth for the 1st and light blue for the 2nd brigade in a division.

The forage cap was replaced in the summer campaign by a very light, cheap and sufficiently serviceable linen cap with a neck curtain to button on. I noticed that the men used to stain these caps green with colouring matter obtained from the beans growing in the field. On very hot days they would put leaves inside. Later caps of khaki colour were issued. The linen or cotton rubashka, or Russian shirt worn outside the trousers, replaced the tunic during the hot months. It is a very serviceable and comfortable garment. The boots are made of a soft flexible leather, not blacked when issued. The men oil them and black them with a dubbing prepared by themselves. These boots are softer and lighter than any used in our service, but they become heavy and soggy in wet, muddy weather, are clumsy for hill climbing, and cannot be considered satisfactory foot gear for the infantry soldier. A light but strong bootee made to lace up the front, with large eyelets spaced far apart, and a bellows tongue would be better. Such foot gear could be put on easily, wet or dry. The Russian authorities have realised the need of a campaign uniform, for the last corps to come out were in khaki throughout. Some troops even had bootees in place of high boots. The usual shoulder pieces were worn on the rubashka, but not the collar patches, and the khaki caps had no coloured bands. These khaki-clad soldiers looked more business-like than any I had seen, and moreover, they were in a dress of national form to which they had been accustomed from childhood. No more practical field uniform for Russians could be devised.

Overcoat.—This was of a rough brownish grey blanket-like cloth and was a satisfactory garment. It was made very loose in the back and belted in at the waist by a strap and buttons in rear. The newer form had a box pleat down the centre of the back, and two half pleats on either side. This made the coat very neat when belted in, and, besides, gave plenty of room. With the overcoat the bashlik or Russian hood is worn. It has long ends which are crossed over the breast and under the belt, the head piece being tucked under the rolling collar at the back and not buttoned on like our own. The hood can be pulled up over the head and ears and secured by winding the long ends about the neck. It is better than our own hood, but it, too, was difficult to keep in place when moving against the wind.

Winter Additions to Clothing.—At the approach of cold weather the European troops exchanged their forage caps for black sheepskin hats or papakhas, a style of head dress peculiarly Russian, of which

officers and men seemed very proud, but which nevertheless proved absolutely unpractical for campaigning as they were visible at great distances and made fine marks for sharpshooters. To remedy this I noticed among the Siberian troops and regiments of the European rifle corps that bags of greyish cloth had been pulled over the papakhas, which not only compressed them into smaller compass, but rendered them quite inconspicuous in colour. Our own fur cap, though not military looking, is a much more practical piece of winter headgear as far as form goes. The colour should be lighter, however.

Woollen mitts with thumb and forefinger separate were issued, but there was nothing so warm and comfortable as our own "muskrat" gloves. Sheepskin jackets reaching to the knees were issued in November. These were worn under the overcoats and were warm enough, but were cheap and badly tanned, having a disagreeable odour in consequence. It was reported also that they accumulated dirt and caused infection of wounds. In fact, cases of anthrax which appeared were laid to these garments. Woollen "portyankas" or foot-bands were worn in very cold weather, and huge felt boots (valenki) were pulled over other foot gear, affording warmth while in the trenches, but greatly impeding locomotion. Soldiers in the Siberian corps were recommended to take the following precautions against frost-bite, viz.: —On cold days wear next to the foot a linen portyanka lightly greased with vaseline or fat, and over it wear a woollen one. On warm days wear the linen portyankas and replace them with the woollen ones at night after arriving in camp. Personally, I found the warmest arrangement to be a knee stocking of soft felt pulled over the ordinary socks and worn inside a boot with leather foot and felt leg. Officers wore these as a rule. Heavy sheepskin overcoats, either black or white, worn with the wool inside, were used a great deal by the officers. They are garments worn by well-to-do Russian peasants and were for sale at the Economic Stores. Personally I found them too warm, and used a furlined Swedish jacket under my regulation overcoat.

Officers' Clothing and Equipment.—The war found the Russian officers without a suitable field uniform. Owing to this fact the greatest license was permitted, and the company officers and subordinate field and staff almost universally wore the rubashka, made of such material as suited their fancy, from fine silk to heavy woollen. There was no uniformity in colour, though all liked to get khaki whenever it could be found. An officer was, however, easily distinguished by his shoulder pieces, his sword and knot, and his sash, no matter how un-uniform his dress might be otherwise. The shoulder piece very clearly shows rank, and being faced with gold or silver braid, is easily distinguished from the men's, although at a distance it is not conspicuous.

The sash, sword knot and revolver cord are all of silver lace, with orange and black silk tastefully worked in. The infantry officer's sword is a good strong broad sword, with a single bar guard of gilt metal. It is better for cutting than thrusting, and is made in three lengths; the edge is always sharp. The scabbard is of wood covered with black leather or morocco, and is mounted in gilt metal. It is carried on two short slings, with the edge to the rear, and is supported by a strap passing over the right shoulder, buckled in front. In a way this is very convenient, for the weapon is always ready for use,

mounted or dismounted, being constantly supported in the same position with the hilt convenient to the hand. It is worn outside the overcoat, is very easily put on or off, and does not incommode the wearer so much as our own, supported by a belt with long slings. The brilliant gilded mountings, however, are entirely unsuitable for the field. One young officer had realised this, and had covered his neatly with black cloth. We now and then noticed the heliographic flashes from the bright nickel scabbards of the Japanese officers when nothing else could be seen, but towards the end of the campaign (Hekotai) I saw one Japanese officer's scabbard covered with black cloth and another with a neat fair leather case. Nothing was more fully impressed upon me than the necessity of suppressing every bright piece of equipment in the field. Even the celluloid map cases carried by the officers flashed light like mirrors. A company officer should be attired as nearly as possible like his men, but many of them wore the usual white tunic, *faute de mieux*, in battle and hence became a mark for the enemy, drawing fire not only on themselves but on their commands. The necessity of a good field glass was not at first appreciated by the average company officer, but later I saw many purchasing fine prism glasses of 6 to 8 power and getting others for their non-commissioned officers.

Soldiers' Equipment.—Waist belt of tan leather supporting two tan leather ammunition boxes for 30 rounds each, on either side of the buckle. Linnemann spade (or light axe) on right side in frog, handle down. A bandolier carrying 30 rounds, over the left shoulder. A canvas pouch holding 30 rounds is suspended by a strap over the right shoulder and is fastened to the waist belt on the left side. A water-proof canvas clothing bag containing 1 pair drawers, 2 shirts, 2 foot bands, 1 pair gloves, 1 house-wife, cloth for repairs, soap, 1 towel, 1 case cleaning material, 4·5 pounds biscuit (2 days' ration in 2 bags), 1⅓ oz. salt in bag, and drinking cup, is suspended over the right shoulder by a cloth-lined canvas strap, and rests in rear of the left buttock. Water bottle, aluminium, copper or aspenwood, also suspended over right shoulder and rests on clothing bag.

The overcoat is, with the hood inside, rolled and worn over the left shoulder. One-sixth of a shelter tent and a spare pair of boots in a bag are strapped to it and the mess kettle is pulled over the ends and held by the coat strap. The total weight carried, in marching order, including portable tools, is about 61 pounds. When it was necessary to carry 4 days' rations and extra cartridges the load carried might be fully 72 pounds.

Remarks on Equipment.—The load carried by the Russian was not deemed excessive in comparison with that required in other European armies, but was thought to be awkwardly disposed, hampering the movements of the men on the march. During the latter part of the campaign attempts were made to relieve the soldier of part of his pack by taking it in carts. In hot, rainy weather with muddy roads this was very necessary. When an advance was contemplated the transport was frequently left one day's march in rear, in which case the soldier had to carry the whole load himself.

In advancing to attack Sikvantun in the fight against Kuroki during the battle of Liao-Yang, one colonel caused his men to leave their packs at the base of the hills and retain only their rifles and ammunition, but I think the men themselves always preferred to retain their overcoat roll at least.

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The Russian soldier carries no knife or fork, but in general had a wooden spoon stuck in his boot-leg. The aluminium mess kettle which was adopted in 1897 was not found serviceable, and the men preferred the old copper one as being stronger. Some of the last troops to come out had these. The wooden water bottle had been almost entirely replaced with one of aluminium or copper covered with cloth. It is worthy of remark that the equipment, as packed, made no sound on the march, a decided contrast to the rattling of our own.

Entrenching Tools.—By regulation the men of each company of infantry carry 80 small Linnemann spades and 20 light axes. These were found serviceable and satisfactory, but it was thought that the experience of the war indicated that it would be better to give each man an entrenching tool. In addition to the above 16 heavy spades, 8 heavy axes, 3 mattocks, 3 pickaxes, and 1 crowbar per company were carried in the divisional transport, making available for each infantry regiment a total of 1,280 small spades, 320 hand axes, 256 heavy spades, 128 heavy axes, 48 mattocks, 48 pickaxes, and 16 crowbars.

(To be continued.)

THE *RAISON D'ÊTRE* OF PERMANENT SUPPLY AND TRANSPORT ESTABLISHMENTS.[1]

By Captain H. C. F. CUMBERLEGE, A.S.C.

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a. A historical review of their inception and development.

b. Some reflections upon the duties which justify them, their relation to one another, and their provision and training, having particular regard to the wide difference between the needs of peace and war respectively.

SUPPLY and Transport form two prominent items in the list of duties for which the administrative staff of an army is responsible. The term "Administration" will be used so often in the following pages that, in view of the widely different meanings not infrequently given to it, an early definition appears to be advisable.

In its most correct military sense, administration is a general term for the machinery by means of which armies are raised, organised, maintained, and governed. The various parts of this machine may be classified under two chief heads, "Command," and "Supply," the first comprising everything to do with the training of the troops for war and their conduct in war, the second embracing that wide field of duties connected with the supply of the soldier himself and everything that he wants—his food, equipments, ammunition, clothing, etc. The fact that a confusion of terms is possible (and such not infrequently occurs) is very apparent. It has accordingly become the custom to limit the term "Administration" to the second class of duties, those described above as "Supply," and the word "Supply" to the provision of articles of food and forage, including their delivery to the troops; in other words, Supply in a general sense includes Transport. "Command" is at the same time disassociated altogether from the term "Administration," so that it is in the sense above mentioned that the latter will be used in these pages.

The principles of administration — nay, the very existence of administrative services—are a sealed book to most people, even to many of those who admittedly know something of armies. How erroneous is the popular idea of the constitution of an army! The average citizen of the British Empire is familiar with the infantryman, the cavalry soldier, the gunner, and last, but not least, the bandsman, but he knows relatively nothing whatever of the departments of the Army, what they are, or why they are. Similar ignorance in a less degree has unfortunately been in the past the rule rather than the exception amongst soldiers themselves.

[1] This paper formed the basis of a lecture delivered to the Members of the North of England Volunteer Institute, in March, 1906.

The art of administration has progressed at a far slower rate than the other sciences which combine to make war the terrible thing it has always been and always will be. There is no question that it is not universally appreciated at its proper value even to-day, despite the warnings, direct and indirect, that have been given from time to time by historians and other able writers on war.

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An army may be compared to a large industrial community; each is composed of artisans who follow a large variety of professions and trades, all of which owe their very existence to one another. In any city there can be found carpenters, joiners, fitters, smiths, bakers, butchers, bricklayers, bootmakers, tailors, glaziers, etc. A list of representative trades might be continued almost *ad infinitum;* but it is sufficient to name a few of the commonest. Now, how would the carpenter and joiner fare if deprived of the good offices of the sawyer who prepares the material with which they work, or of the smith, human or mechanical, who manufactures their tools? Where would the bootmaker be without the tanner in the background, the tailor without the spinner and weaver? And where would one and all be if the butchers and the bakers and the purveyors of foodstuffs of all kinds were suddenly to take leave of the city in a body?

The allegory has been carried far enough to show plainly what is the point aimed at: every officer, warrant officer, non-commissioned officer, man, and boy of an army has a trade. Is it more than bare justice to class the trained rifleman and the trained horseman as skilled workers equally with that numerically small class of soldiers, known as the artificers, who keep the rifle in order and shoe the horse, and who are so called solely because they practise "trades" which are rare amongst soldiers, and, moreover, are common to both civil and military communities. The several elements of an army are, like those of a city, dependent upon one another, and only by their effective co-operation and absolute cohesion can the complete machine be started and kept in motion.

The trades represented in an army might easily be classed according to their relative importance. Opinions would no doubt differ on many points, but the arts which in combination serve to carry on the branch of army administration known as Supply, cannot fail to take, by common consent, a very high place on the list. The reason is not far to seek. Nothing but disaster, greater or less, can be expected for an army the infantry of which cannot shoot even moderately well, or accomplish an average march, or the cavalry of which cannot be trusted to sit on their horses. On the other hand, an army composed of marksmen, perfect horsemen, and unfailing artillery can hope for nothing short of annihilation if deprived of food and forage. Similarly an inefficient commissariat may, and almost certainly will, frustrate the best military projects, while a general ignorant of commissariat duties may equally nullify the most admirable administrative arrangements by his inability to estimate the difficulties or facilities attending them. Again, an army does not fight every day of the month, but it does, or at any rate desires to, eat daily without fail.

Frederick the Great wrote: "Hunger will overcome the greatest courage, sap the most rigorous discipline, and cause the collapse of the most able conceptions." Surely there can be no question

whatever of the prime importance of "Supply." It not infrequently happens, that it absolutely dominates the army machine. So far as it goes, history teems with illustrations of this fact, and here and there, throughout long periods during which there was a lack of completeness in the study of the science of war in all its phases, such as obtains nowadays, history shows us that victory was often the prize of the general who studied most the welfare of his men, although in other respects the odds were against him. Wellington once modestly disclaimed greatness as a soldier, but claimed that experience and circumstances had made him a first-class commissariat officer. In fact, it is impossible to pick up the histories of any great campaigns without finding in their pages many references to Supply and Transport (generally the want of them), and how they influenced the course of events.

The most prominent feature of the strategy of the Japanese in their recent war appears to have been its rigidly uniform subordination to questions of Supply and Transport. The Japanese have, however, only forestalled us—in so far that they were the first nation to have the opportunity to test modern theories under service conditions—they have not demonstrated any new principles. Supply and Transport find a prominent place in the solutions to all strategical problems that are worked out nowadays by the officers of our own and foreign armies, whether they deal with purely imaginary situations for purposes of instruction, or with facts, and the solutions are intended for practical application in time of need. It was not always so, and even to-day it is a question whether Supply enjoys a prominence wholly commensurate with its importance.

In our own Army particularly, the habit of giving Supply and Transport more than a passing thought is of very recent date, for we have always as a nation been backward in appreciating the value of administrative services. The fact has been attributed to the individualism which is characteristic of the Englishman, and which, in its application to the case in point, is most aptly, though perhaps extravagantly, illustrated by the following story, which may or may not be authentic. When the expedition for the Crimea was in course of preparation a cavalry officer is recorded to have enquired, without the faintest intention of perpetrating a joke: "Are the Infantry to accompany us?" Comment is needless.

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It has been shown to how great an extent the well-being of armies is dependent upon Administration in general, and that branch of it known as Supply in particular. An understanding of this fact is essential to a proper appreciation of the case for *permanent* Supply and Transport establishments, with which, the way having been prepared, it is now possible to proceed.

The following sentence appears in Napier's "Peninsular War":—"War tries the strength of the military framework; it is in peace the framework itself must be formed." The axiom applies equally to every portion of that framework, no matter of how small, or great, importance it is when considered by itself.

The fighting soldier learns his trade in the army, there is no other school for him, and in these days of rapid transit, and quick communication, it is more than ever necessary for him to receive a thorough education in time of peace. There was a time when the

ruler of a nation, desiring to make war, spent months, sometimes years, in raising, equipping, and training his army. His intended adversary had due notice, of course, and did likewise. When both were ready they fought. That was the age of chivalry; as it passed away the instinct for self-defence taught the nations to try, each one of them, to be ready first. Standing armies owe their inception to a variety of causes, but this was certainly one of them.

The case of the administrative services, the Departments as they are called, is slightly different. The trades represented amongst their subordinate ranks are practised and taught in the Army, and out of it. But there the distinction stops. The most highly skilled tradesmen, whether butchers, bakers, carters, clerks, or smiths, etc., are of little use to an army until they have gained experience of army customs, have learnt how to turn their skill to good account under difficulties, and, most important of all, have become disciplined. Such training cannot nowadays await the advent of war any more than that of the fighting soldier, whose case again finds a parallel in that of the departmental officer. The latter's duties are more administrative than executive, and therefore cover a wider field of knowledge and experience, such as it is only possible for him to acquire by means of continuous service. His duties have no exact parallel in civil life. Peace service gives him little enough opportunity to prepare himself for war, but, such as it is, it is better than nothing.

In these facts lies the most powerful argument in favour of peace establishments for the administrative services or departments of armies. That the argument is sound is amply demonstrated in the pages of history.

The problem of Supply has always been, and is to this very day, partially solved by resort to plunder. The latter has become more and more regulated with advancing years under the influence of civilisation, but plunder it remains all the same. To-day it is characterised by systematic requisitioning, but what other name can be given to the act of levying contributions in kind, or money, even though compensation is not withheld, and force is not *openly* employed? That this solution is as popular to-day as of yore is amply demonstrated in the guiding principle of Supply, namely, that the troops should live upon the country *so far as is possible*, and that their trains should be regarded primarily as reserves for use when other sources fail.

Although it is only within a comparatively recent period of history that plunder has ceased to be the *main* source of subsistence for armies (and history does not carry us back comparatively very far), yet there can be no doubt that the question has consistently been given some consideration, however slight, from the very dawn of their existence.

Unqualified observance of the principle that "war should support war" is a system which soon destroys itself. When armies expected to feed themselves chiefly by plunder, it mattered little whether the theatre of operations were friendly, hostile, or neutral, and again and again do we find campaigns abandoned and well meant projects defeated because the theatre of war had been too greatly taxed to be capable of continued support of the opposing forces. At the same time, it is well to notice how the development of the art of war has taken advantage of this very fact, and how deliberate devastation, with the avowed intention of embarrassing an enemy, is recognised as

a practical weapon of offence or defence. The failure of Napoleon's campaign in Russia furnishes perhaps the best example of its application.

It is, however, improbable that this point of view had much weight in the times of the ancients, nor, for that matter, through much later periods of history; but it happened so often that the whole and untouched resources of a country were too small to maintain an army for even a short space of time, that from the outset habits of forethought, and administrative arrangements, were forced upon military leaders.

The opening chapters of history disclose Egypt as a finished product, a fully developed, highly civilised, state. Such records as we have show that the supply of Egyptian Armies that fought 5,000 years ago was made the subject of careful arrangements. There is nothing very wonderful in this because the Egyptians had the passage of deserts to face on nearly every side. The era is quoted, however, as a starting point, further back than which it is neither desirable nor possible to go.

Administrative officials and arrangements are frequently referred to in the writings of later, though still "ancient" historians, and the accounts of the methods adopted to meet the needs of special occasions are sometimes noted very fully. For instance, Herodotus, "the father of history," tells us that Xerxes occupied himself for four years transporting grain and other articles of food to the borders of his territories, before his invasion of Greece in the year 480 B.C.

In the armies of the Greeks there were officials who combined the two principal administrative duties—Finance and Supply. The combination deserves especial notice, it appears and disappears with great regularity in later years, and to this day is the object of considerable divergence of opinion. There was in addition a staff of minor officials, and it is evident that organised departmental services existed. But plunder was still the chief means of supply, and numerous instances testify to the fact that where plunder failed to be profitable, dire disaster was sure to follow. The fate of Xerxes' huge force, after the battle of Salamis (480 B.C.), and the sufferings of Xenophon's famous ten thousand during their retreat to the Black Sea (400-399 B.C.), are well known.

Next in order we come to the Macedonian armies under Alexander the Great. These were likewise well organised, and their subsistence was undoubtedly arranged for on well-thought-out plans. When the invasion of Persia was undertaken (334 B.C.), Alexander issued orders, soon after landing in Asia Minor, to the effect that the country was not to be devastated, nor the people injured. Such an order could not have been issued had not supplies been already collected in plenty, or arranged for.

The Romans, at a very early period of their history, seem to have recognised the importance of sound administrative arrangements, and, were there no other indications of the existence of an organised commissariat, we might infer it again from their stringent regulations against pillage. Such regulations could never have been established, or enforced, had not means existed of supplying the soldier's wants in some other way. Following the example set by the Greeks, the "Quæstor," with an army, was supreme on all matters of administration, being charged with subsistence, clothing, equipment, and pay. The "Quæstor" was a very great man. The office was a step towards

the Senate, and equally a qualification for military command. Julius Cæsar acquired much of his knowledge of military matters while Quæstor to the Roman legions in Spain, and the records of his wars afford frequent proofs of the attention paid to the subsistence of his soldiers.

The provision of transport throughout these periods was on a par with other administrative services. We know that the Romans had Transport officers, although their position is not very clearly defined, but wherever we trace organised supply we may unhesitatingly place organised transport as well. No sane person could dispute the fact that bread, and meat, or warlike stores, cannot be expected to drop from the skies at the right time and place. The executive supply officer collects them in magazines and depôts, but he is dependent upon the transport officer to bring them to the troops. The chief administrative officer was doubtless responsible for Transport, and it is highly probable that the service never had a separate departmental existence, but was consistently held to be an integral portion of Supply.

Through the centuries that immediately follow the fall of Rome, we find that the science of administration does not keep pace with the progress of the art of war generally, and the inevitable results are emphasised in numerous accounts of the sufferings, and consequent demoralisation, of the armies of those times.

In fact, the fall of the Roman Empire marks a great set-back. Under the feudal system of the early middle ages the maintenance and equipment of soldiers devolved upon their immediate chiefs, and as a natural consequence uniformity and forethought were non-existent. In practice the soldier supported himself as best he could by plunder; but the most fertile theatre of war must become exhausted under such a system, and at this period human life was sacrificed to an appalling extent for want of the most ordinary forethought and care. The first Crusades (A.D. 1096) furnish the most remarkable instance of this. We read of 500 men dying daily on the march from hunger, and that only one-tenth of a very large army reached its goal. The Turks ravaged and devastated the country in front of its line of advance through Asia Minor, and the dire consequences of want of organisation were thereby intensified. It is only just, however, to recall the fact that the Crusaders were volunteers, not bound by a feudal tenure. It is possible that had the expedition been national some attempt at organised supply would have been made. The illustration is, however, not so exceptional that it cannot serve as a fair example.

By the beginning of the fifteenth century the necessity for specially appointed administrative officers had become recognised. About the best examples of the manner of conducting war in the middle ages are furnished by the campaigns of Henry V. in France (circa A.D. 1415). The deficiencies of the feudal system, amongst them "limited liability," had come to be fully recognised by this time; further, the necessity for centralised, State-aided administration had become understood, and Henry's campaigns were only entered upon after the most elaborate arrangements had been made. "Contracts" formed the basis of these. The nobility contracted to serve in person, with a certain number of retainers, and "contract" entered largely into the solution of the Supply question; but plunder still played its part, nor was that part a small one.

It was, however, reserved for the sixteenth century to tackle the question resolutely. From this time onward it was recognised that

certain administrative offices, with fairly well-defined duties, must be filled on the outbreak of war; but it is most important to a proper appreciation of the situation to remember that these offices were non-existent in peace time. In the first place, it was not until a considerably later period than this that standing armies came into being; and, secondly, when they did, for a longer period still their subsistence in peace was arranged (without the assistance of any commissariat corps) by means of contracts effected by the Treasury, or directly by regimental commanders, who received lump sums of money to provide for the upkeep of their regiments.

The following officers were on the staff of generals commanding during the reign of Elizabeth:—

The Treasurer at War.
The Proviant Master.
The Wagon Master-General.

Their titles clearly indicate what were the duties of these officials. The "Proviant Master" and the "Wagon Master-General" were independent of one another, and though we read of the Proviant Master having "under him a lieutenant, a secretary, a clerk, a wagon master, and several officers who were called directors," it yet seems that, in the main, Supply and Transport were two distinct services, for the first time on record. The separation of Finance and Supply is also an innovation of great importance.

On the other hand, in the Dutch, Swedish, and some of the German armies of this time and throughout the seventeenth century, the Wagon Master was subordinate to the Proviant Master, and in fact experiments in the separation of Supply and Transport have, on the whole, been peculiar to ourselves.

The soldier of this period was very badly supplied, and complaints were chronic, corruption being the chief cause. All foodstuffs were obtained by contract or by direct purchase from hordes of unscrupulous hangers-on, who followed the armies through their campaigns.

The organisation of the Swedish army, however, was an exception to the general rule, and was far in advance of the times; but that was the work of a man, not of a principle. The man was Gustaf Adolf, the great soldier King.

Lieut.-Colonel the Hon. E. Noel, in "Gustaf Adolf, the Father of Modern War," describes the advent of this great soldier as the turning point in the decadence of military science. The tactics of that time (early seventeenth century), he says, were those of the ancients 2,000 years earlier, while administration, far from having improved, had unquestionably deteriorated.

Gustaf Adolf developed new principles of tactics, but his success was not due to tactical skill alone; he was a born administrator, and by that combination of abilities made for himself a name which is one of the few "great names" in military history. Were it necessary to further emphasise the importance of administration it would be a simple matter to instance liberally the lives of Marlborough, Eugene, Wellington, Frederick the Great, and Napoleon, not to mention the most celebrated leaders of olden times. It is well worth the while to think over the undoubted fact that each one of them displayed administrative abilities of the highest order, and was far in advance of his time, and at the same time to consider how certain it is that,

without such abilities, the names of not one of those great men would ever have become the household words they actually are. Gustaf Adolf was the pioneer. He initiated no original methods of supply, but his regular army developed the immature system in use, and brought it actually into nearly equal prominence with the other details of his system, which became the model for succeeding generations. There were leaders before his time who displayed administrative talents of a high order, and conducted successful campaigns, but none who waged war with so little expenditure of life from causes other than battle.

From this time onwards administration in general, and Supply and Transport in particular, have gradually come to be assessed more and more generally at their true value, and to receive proportionately increased attention. Progress has certainly been very slow, but none the less, changes have always been in the forward direction.

When Fairfax and Cromwell organised the "New Model Army" in 1645, the list of administrative appointments was considerably extended. There were Treasurers at War, Commissaries-General of Victuals, and of Horse Provisions, a Wagon Master-General, and, for the Train (as the artillery was then called), a Commissary of the Draught Horse, and a Commissary of Ammunition. Gun teams and their drivers were at that period hired—a practice which, in fact, continued until the end of the eighteenth century. In Napoleon's first Italian campaign (A.D. 1796-1797) the gun teams were all hired.

It may be questioned, however, whether this Army can rightly be quoted as typical of the century. The "New Model Army" was an army such as the world has perhaps never seen before or since, nor ever will again, and it had a very short life. It is probable that its subsistence was attended to as carefully as its technical training and its moral welfare. It was not so, at any rate, with the armies of the first and second of the Stuarts, nor with that of the Restoration, the first parent of our army of to-day.

The soldier of the Commonwealth was a zealot, and, therefore, the better equipped to undergo privations than his uninspired comrade of the early part or end of the century, yet the former fared well, while the lot of the latter was little better than it had been during the preceding hundred years.

The administrative officials were incapable of looking beyond the civilian speculators and tradesmen that followed the army, a limitation which was the cause of most indifferent results. They enjoyed, moreover, only temporary appointments, the offices which they held being only filled, as a general rule, when a state of war existed, and in that lies the secret of their failure. The experiences of individuals were never recorded for the mutual benefit of contemporaries, or for the instruction of their successors.

One campaign of the Commonwealth Army deserves notice, for the remarkable administrative skill displayed, namely, that of General Monck in the Highlands in A.D. 1651. That officer organised an elaborate chain of magazines on a scale that had never before been attempted, at any rate since the days of the ancients. His administration of his army was likewise of a high order. Monck displayed talents far in advance of his time. He has not left such a decided mark in history as Napoleon, Wellington, Alexander, Frederick, and one or two more, but he went very near it. But the time was not yet ripe; Monck's methods passed away with him, and the credit for the first definite pronouncement in favour of an elaborate system of

magazines, stationary and mobile, as the key to the problem of Supply, rests with the French through the genius of Louvois, the great War Minister of Louis XIV.

The conditions described so far are characteristic of all the armies of Europe during the fifteenth and sixteenth centuries, and with slight variations, of the seventeenth and eighteenth also. It is not surprising, therefore, to find that the soldier continued throughout that long period to fare but little better than he had done through the years which saw the decay and fall of the feudal system. The methods in use were themselves crude, and they showed up even worse through the fact that the officials who applied them were invariably quite untrained, and as often dishonest.

The scandals of the Commissary's Department of our Army were probably never worse than in the reign of William III. (A.D. 1689-1702). The iniquities of Commissary Shales are written down in many places. One of his exploits is recorded by Macaulay: "The means of transporting baggage and artillery were almost entirely wanting. An ample number of horses had been purchased in England with the public money, and had been sent to the banks of the Dee. But Shales had let them out for harvest work to the farmers of Cheshire, had pocketed the hire, and had left the troops in Ulster to get on as best they might."

The campaigns of Marlborough, Frederick, Napoleon, and Wellington are refreshing exceptions to this tale of mismanagement, but they only shine by comparison. The armies of each one of these leaders suffered at times great hardships from want of food, owing to circumstances which were too much even for them.

It must be noted that the English Army's "Treasurers at War" were short lived. We find the power of the purse held once more, towards the end of the seventeenth century, by a general administrative officer, in the person of the commissary. The Treasury not unnaturally claimed the right to nominate him. Since he was usually a civilian, his sympathies leaned towards his civilian master, the Treasury, rather than his military master, the Army, to which he owed an equal allegiance. The result was constant friction.

At the commencement of each campaign the whole business of organisation had to be gone through from the very beginning by individuals who probably had no previous experience whatever, or, if they had, were not up-to-date in matters military. It must be remembered that the science of war was progressing rapidly at this period, and each successive campaign brought to light fresh difficulties as regards Supply and Transport, which the primitive methods of administration in use became less and less able to surmount.

The collection, custody, and distribution of provisions not seldom formed only a small portion of the commissary's duties. The Military Chest was also placed by the Treasury in his care, and very often he was made the representative of the Ordnance Department, and medical storekeeper as well. All this meant a heavy load of responsibility on the one hand, and considerable power on the other. The hapless untrained civilian either collapsed under the weight of the former, or had his head turned by the latter. In any case, friction with the executive was a standing corollary, and relations between the civil and military chiefs became not unfrequently so strained as to bring matters to an *impasse*. On one occasion at least the commissary, backed up by the senior naval officer, caused the complete failure of

an expedition oversea by refusing to land the guns and stores under his charge. On the other hand, it is on record that on another occasion the general and the admiral, in accord this time, took the bull by the horns, and, at the very commencement of the expedition, confined the commissary under guard in a ship by himself, and relieved him of all his duties and powers.

Other nations, as has already been stated, were generally in a like case. In tracing the course of army administration through history, it has been convenient to quote alternately the customs of our own and of foreign armies. The nations imitated one another to a large extent, and set the fashion in turn, and the sequence of events is kept clearer by consistently quoting the leaders for the time being.

The Seven Years' War (1756-1763) brought into prominence Frederick the Great and his kingdom of Prussia. He established a most efficient commissariat, and took the first big step up the ladder planted by Gustavus Adolphus of Sweden. He upheld the method of the ancients, and put practically the whole of the administrative services in the hands of one administrative official and his staff, who controlled the military chest as well as the commissariat, and he took up, improved, and established on a permanent basis, the magazine system initiated by Louvois. The German Army has retained the system of centralised administration to this day, but with us it was accepted by the Treasury very slowly and cautiously, and was only fully established during the Peninsular War. It has since been discarded altogether, although nearly all modern armies of consequence have, one by one, adopted it. During the Seven Years' War, our commissariat became very efficient, but with peace it was hastily abolished, and the revolution in America, a few years later, found us once more quite unprepared with any machinery for the supply of the Field Army. The consequences were quite on the usual scale; but once more the end of the war saw the prompt abolition of an organisation built up, during the continuance of hostilities, into an efficient service.

The year 1793, however, is marked by a most important innovation, so far as the British Army is concerned. We find, for the first time, the nucleus of a permanent commissariat. The principal duties of its members consisted in the superintendence of the contracts entered into by the Treasury, and, in some cases, the making of local contracts. But the majority were employed on foreign service, and their power was little more than that wielded by the Treasury agents, whom they superseded. They enjoyed, however, a military status, the important point so far as history is concerned.

The outbreak of the Peninsular War found the department very weak and inefficient, practically untrained, and with little organisation. The Duke of Wellington's despatches make this fact very plain, and we get one more example of the folly and iniquity of commencing war without properly organised administrative services to minister to the well-being of the troops. There is no need to enlarge upon the consequences to this campaign, the facts are too well known. The Duke set to work himself, and combined the duties of Commissary General with those of Commander-in-Chief. In the course of the war the Prussian Intendance system, initiated by Frederick, was fully adopted, the three great elements of army administration—money, supply, and transport—being placed under one chief. This arrangement was not disturbed on the conclusion of peace, nor, for the first time, was the

commissariat department disbanded. It was, however, gradually reduced until foreign service claimed the whole establishment, supply in England and Ireland being arranged for by regimental contracts, or by the Board of Ordnance. In 1840 the department received some much-needed help at the hands of Sir Charles Trevelyan, Assistant Secretary to the Treasury. He issued a code of instructions to the great advantage of all concerned, and a solid basis for future development was at last provided. The duties of the department were summed up as follows:—

1. To raise, keep, and impress funds for the service of the Crown in our Colonial possessions.
2. To provide, by means of contract or otherwise, all food, forage, fuel, and light for the troops abroad.
3. To purchase and contract for all troops and supplies required to be provided for the use of the Army abroad, and for the Naval Service also.
4. To provide all transport by land and inland navigation, and in the absence of naval agents, to provide for sea transport.

The list describes sufficiently comprehensive duties to warrant the attention of more than a single individual at each station. The "penny wise and pound foolish" tendencies of the seventeenth century had, however, not yet been altogether eradicated, and we find the commissary charged with yet other duties, such as the custody of cash and stores for convict establishments, and the pay of pensioners, the duties of Naval Agents and Colonial Treasurers, of Ordnance Storekeepers, and Barrack Masters.

It is necessary now to hark back a little in order that the progress of the Transport service may be described up-to-date.

In 1793, soldiers trained as drivers, were, for the first time, provided for the British Artillery. In the next year a corps of "Royal Wagoners" was formed. It survived less than a year of active service. The duties of the corps are not very clearly understood, but it seems that it was principally an ammunition column, and, if so, it cannot claim to be called the first organised transport corps, for which we must go on to 1799. In that year the "Royal Wagon Train" was organised, its officers ranking as combatants.

At first sight the institution of this train might appear a new departure in two ways: the first regular Transport, and a separation of Transport from Supply. It cannot, however, justly be so described. The prime duties of this corps were the carriage of ammunition, *some* regimental baggage, and the transport of the sick and wounded. The corps did not provide any transport for supplies. In the Peninsular War the commissariat continued to find its own transport (improvised, of course), and, further, there is abundant evidence to show that the commissariat continued, as heretofore, to hire or otherwise provide transport for baggage when the resources of the Royal Wagon Train were expended. Whatever the Royal Wagon Train did (and it certainly served through the campaign, whether as ammunition columns, as is very likely, and as ambulance trains, for the convevance of sick and wounded, and even as baggage trains, to a very limited extent), there is little doubt its officers were never recognised as what we understand nowadays as transport officers. Their corps was a

luxury, and it would seem that they were in no way responsible for the transport service beyond what they could carry by means of their own military vehicles. That was proportionately very little, and beyond it the commissariat provided as before. The Royal Wagon Train lasted until 1833, and was then disbanded.

It would not be unreasonable to suppose that our next big war should have found us, at any rate, partially prepared with organised Supply and Transport services. The attempts to provide them during the period just described prove that the necessity for them was, for a time at any rate, recognised. The seed had, however, not matured.

The outbreak of the Crimean War found us once more without any organisation for Transport, and scarcely more for Supply. Only five years before a committee on "Army and Ordnance expenditure" had delivered itself of the following marvellous statement. I quote extracts only:—

I. "There is no necessity for a commissariat department in Great Britain."

II. "After so many years of peace, it appears to your committee that the arrangements of the commissariat department are all based upon a state of war, which seems to be unnecessary, inasmuch as it appears on the highest evidence that no training in time of peace will fit a commissary for his duties in the field during war."

The second pronouncement is the most interesting, and is worth analysing a little. There is no doubt that it has a substratum of truth, and there can be no reason to suppose that it was set forth with other than the best motives, however suspicious we, in the light of latter day experience, may be of a committee on *expenditure*. The statement that no training in time of peace will fit a commissary for his duties in war can be qualified, but it cannot be explained away altogether. It will come up again for discussion later on, and may therefore be passed over for the present.

In consequence of this report the few remaining commissariat officers on the Home Establishment were got rid of. In justice to a generation (not otherwise noted for any special acts of folly), it must be said that this committee's recommendation met with much openly expressed disapproval, even the Treasury joining in. However, they were carried into effect, and shortly afterwards the war with Russia broke out.

Improvisation of a supply service for the war took the form of denuding all the foreign stations of commissariat officers, and begging for volunteers from Government and other public offices, and from the Royal Irish Constabulary. The subordinate ranks were recruited anywhere, and neither they nor their officers had any previous experience whatever of the duties they were called upon to perform. There was nothing new in this except that the inclusion of a few regular commissariat officers made the case rather better than in former wars. The need for transport was recognised by the formation of a Land Transport Corps, recruited by volunteers from other arms of the service.

The fatuity of trusting to hasty improvisation was once more amply demonstrated. There is no need to enter into details, they are too well known.

The Land Transport Corps was disbanded immediately after the war. In 1857 a new corps was formed which served through the Indian Mutiny, in China, and in New Zealand. It was called the Military Train. Its officers held combatant rank, and incidentally it may be remarked that its first battalion served as cavalry during the Mutiny.

The Land Transport Corps and the Military Train marked a serious effort to divorce Transport from Supply. We find in the Crimean War abundant evidence of the folly of this course. The failure of the Commissariat was certainly due very largely to the shortcomings of its *personnel*, for which, by the way, it was itself in no sense responsible, but the separation of Transport and Supply helped in no small measure to magnify the general bad effect.

By 1870, Transport and Supply were united again under one head, together with certain other departments. The new organisation was called the "Control." In 1854 the Commissariat had been transferred from Treasury control to that of the War Department, on the appointment of a Minister of War. It was contemplated that the Commissariat should be immediately relieved of its financial duties, but the scheme fell through on the score of economy. Two officials would have been necessary at each station, where one had previously sufficed. Accordingly, we find the Control Department administering finance with the other departmental services, and, while it lasted, we had a system approximating very nearly to the Intendance of the French and Prussian Armies. It endured, however, only five years, its downfall being due to the fact that the comprehensive nature of its duties gave it too much power, while the civilian nature of its *personnel*, and the spelling of its title, did not add to its stability. In 1875, finance was once and for all divorced from the Commissariat, and the other departments of the Control were also started on organisations of their own, Supply and Transport alone being left together under the name of the "Commissariat and Transport Corps." In 1880 the officers of this corps were re-named the "Commissariat and Transport Staff." Both organisations laboured under certain disabilities, and in 1888 the Army Service Corps was born.

(*To be continued.*)

THE PROBLEM OF FIRE SUPERIORITY.[1]

By Lieut.-General H. N. ROHNE.

(Translated by permission from the *Jahrbücher für die Deutsche Armee und Marine.*)

The following remarks, by General Rohne, one of the leading German military writers, in which he draws attention to Captain Bernatsky's work, may prove of interest:—

THE fighting regulations of all States lay down as the primary condition for the success of the infantry attack that fire superiority should be acquired. Unfortunately, neither the regulations nor the tactical manuals point out the means by which this superiority should be obtained, so that opinions differ widely on this the most important question of infantry tactics. It is, however, generally agreed that everything must be done to inflict the heaviest possible loss on the enemy, and to avoid, as far as possible, increasing one's own. The observance of this principle is only difficult to follow in that the one condition is frequently only possible at the expense of the other.

Captain Bernatsky, who has already become very favourably known through his recently published study on "The Fight for Prepared Positions," examines first the conditions which influence the efficacy of fire from a purely ballistic point of view, such as, the number of rifles in action, rapidity of fire, probable accuracy of fire (depending on knowledge of the objective, on the ascertaining of the proper sighting, on the size of the vulnerable surface, and on precision), and proves that conditions being equal the advantage lies with the defender over the attacker. How is it possible, in spite of that, for the attacker to obtain fire superiority?

On this subject two completely conflicting opinions are especially noticeable in military literature. The one lays down that the assailant should "always maintain his advanced fighting lines at the same fighting effective by constantly pushing up fresh forces from the rear to the front, so as by continual effort to finally break down the enemy's resistance." In opposition to this the other opinion asserts "that by suitable measure such external conditions of effectiveness should be secured as the entrenched defender already possesses"; the attacking formations could then bring matters to a successful conclusion with a comparatively small numerical superiority over that of the available hostile forces.

[1] By Cornelius Bernatsky, Captain on the Grand General Staff of the Austro-Hungarian Army. Vienna, 1905.

The author next examines the possibility of carrying out these two methods by applying to them a concrete example. If the attacker and the defender occupy a front of the same length, and have the same number of rifles available for action, the assailant's losses under similar conditions, would, according to the author's calculations, be 3·7 times larger than those of the defender, as the assailant's vulnerable surface which is not covered, is 3·7 times larger than that of the defender, who is protected up to his neck. The distance here is of no importance. He, in consequence, then takes for granted that after ten minutes the assailant has lost 32 and the defender 9 men. These numbers are merely assumed in order to have a fixed basis. The important fact is here less the absolute than the relative value of these figures; the absolute value depends on the distance separating the two lines of skirmishers, the accuracy of the fire, and the depth of the lines; the relative value of the two figures entirely depends on the size of the vulnerable surfaces. If, for example, the defender is not able to cover himself as well as we have assumed, and his vulnerable surface is double, the figures for the assailant's losses do not alter, but the defender's, on the other hand, will be twice as great.

According to the author's assumption the assailant will have made good his losses after 10 minutes, but the defender cannot do so. The effectives, which, at the beginning of the action, were as 100: 100, are henceforth as 100: 91. The result of this is that in the 10 following minutes the assailant no longer loses 32, but only 29 men; the losses of the defender, who has not been able to make them good, also becomes less, not, of course, in the same proportion; he loses in the following ten minutes 8 men. After the assailant has replaced his losses for the second time the proportion of the opposing effectives is 100: 83. This proportion thus continually shifts in favour of the assailant, but it is only after a two hours' fight, during which he has sent 250 fresh rifles into the firing line, that the percentage of losses of the assailant and the defender become equal, and this proportion remains constant if the assailant's fighting line receives no further reinforcements, as every fresh reinforcement gives the balance in his favour. In the two hours' fight the defender lost 70 men; the proportion of the effectives, 100: 30,[1] now almost corresponds to the vulnerable surface; the assailant loses 10 men, and the defender 3 in ten minutes.

It must be conceded that the proportion has been taken on too favourable a basis for the defender, as it is assumed that every one of his marksmen would be completely covered with the exception of the head, whilst, on the other hand, the assailant is supposed to be on an absolutely level plain without cover, which does not in reality exist. If the defender presents a vulnerable surface only half the size of that of the assailant (instead of 3·7 times smaller), the conditions remaining the same as before, the assailant should be able to establish an equality within 40 minutes by only sending 113 fresh rifles into the firing line, and in this case too, the assailant would

[1] Calculated accurately, the defender can only count on 27 rifles, the assailant must, therefore, once more replace his losses, which would then amount to 260 men.

find himself with 100 rifles as against the defender's 50. This will show how advantageous good cover is.

I expressly emphasise the fact that here only the purely material efficacy of fire is considered, and that the psychological moment is entirely left out of account. People may rightly object that no defender could maintain so long a fight where the assailant appeared to be immortal, as he was always able to make good all his losses; the defender would be compelled to give in sooner. Quite right, if we only allow the psychological moment to operate on the defender, and assume that the assailant is in no way affected by it. The latter, however, suffers far greater losses from the very commencement, and even if he is able to replace them, the men in the firing line are liable to become disheartened, and this must disadvantageously affect the quality of their fire. It has also been assumed, in the assailant's favour, that it is possible for him to bring up his reinforcement regularly into the firing line, whilst it is evident that he must suffer very considerable losses while doing so, as they present twice as large a vulnerable surface as the firing skirmishing line. It is rarely true, too, as a matter of fact, that the defender is absolutely incapable of making good his losses. I therefore consider that, according to this calculation, the lights and shadows are distributed too greatly in the assailant's favour, and that the chances are very unfavourable to him if both parties are equal at the commencement of the action. That method, of continually sending fresh reinforcements into the firing line, must, therefore, fail in reality, and would only cause immense loss to the assailant. No single instance can be cited in the history of war where this method has been crowned with success. On the contrary, a whole series of abortive infantry attacks may be pointed to, in which it was found impossible by that means to obtain fire superiority.

This examination may be considered dry and pedantic—a favourite method when one is not able to demonstrate its faults—but the author may at least claim for himself the merit of having gone into this difficult problem without prejudice and without circumlocution. He has, moreover, with this object, made use of the same method which I adopted in a previous article, "How is fire superiority to be attained in the infantry attack?"[1]

He then devotes himself to the other opinion, which requires that the assailant "should enter on the inevitable conflict for fire superiority under similar, and, if possible, under more favourable conditions of efficiency than those possessed by the defender." As such he cites in the first place; as superior a number of rifles as possible, and an attention to a plentiful supply of ammunition; then an accurate reconnaissance of the enemy's position, correct sighting, masking one's own firing line, and diminishing one's own vulnerable surface from the enemy's fire. The method of bringing a superior number of rifles to bear is frequently found in the disposal of one's firing line in *échelons*, where there is not sufficient space to deploy into line, and by enveloping where the assailant has full liberty for deploying, viz., against isolated or salient points, and more especially on the flanks.

[1] *Militär-Wochenblatt*, No. 71, 1899, p. 1786. Translated in JOURNAL for March, 1900, p. 258.

The assailant thereby possesses a great advantage, viz., that he does not require to obtain fire superiority along the whole front, but only at one point. It suffices to retain the enemy's forces extended along this front by units under good cover, capable of keeping up a well-sustained fire, so as to be able to act against the various positions with the greater force. The defender, who can never know where he is most threatened, dare not weaken certain portions of his position to strengthen others.

As regards the question of ammunition supply for the assailant, the author treats it with, I might almost term, an enviable optimism. He is of opinion that when the firing line has been established on the limit, where the ground covering it changes into open country, there will be no longer any question of the difficulty, still less of the impossibility, of the supply of ammunition during the action; "the whole problem of reserve ammunition shrinks to a technical problem of properly regulating the supply. But the attack on prepared positions renders it necessary, in one form or another, to make, in regard to the firing positions, certain technical preparations, amongst which the supply of cartridges to the position must certainly be included." I cannot regard this question as such an exceedingly simple one. It has frequently occurred that the defender has amply provided his firing line with cartridges, but I know of no example where the assailant has similarly furnished the "position." I have naturally no intention of contesting the possibility of distributing the contents of the ammunition wagons to the men before the advance.

The introduction of smokeless powder has greatly increased the difficulty of reconnoitring a hostile position; the author, therefore, demands a special reconnaissance of the objective by infantry. As is well known, French skirmishing lines are preceded by special scouts; opinions on this subject, however, differ greatly even in France.

He further demands the adoption of a first-rate range-finder, because the defender will probably endeavour, by long range fire, to prevent the assailant from coming to decisive ranges. The greater the distance so much the more are errors in judging it felt. In order to diminish the vulnerable surface, resort must be made to the spade, and, if necessary, similar methods to those used in siege warfare employed.

I am still less in accord, for different reasons, with what is said about accuracy of fire. The author makes use of a very unusual scale for the measure of accuracy, viz.: "the mean quadratic deviation," and thus renders the study of his work in the highest degree difficult, even to readers familiar with questions of ballistics.

He has, in addition, a totally false conception of the value of errors of sighting, etc., on the part of the skirmishers. According to him average shots have a deviation only about half as great as that of marksmen, as demonstrated by the trials made by the Experimental Rifle Commission at Spandau, to which Captain Krause refers in his book, "The Form of the Cone of Dispersion of Infantry Projectiles." As, however, no further conclusions regarding it are arrived at, the subject need not be pursued.

On the other hand, the chapter by the author, entitled "Retrospect and Prospect" is a most remarkable one. The experiences of the English in the Boer War confirm everything that has been said on the difficulty of obtaining fire superiority; he very rightly recognises as typical many phenomena which appear surprising

at first sight, viz., especially the checking of greatly numerically superior frontal attacks, very shortly after the opening of fire by the defenders, at distances from 600 to 1,200 yards; the persistent clinging to prone positions by the attacking lines for hours at a time under the defender's superior fire; the cautious utilisation of even the slenderest cover, which explains the small loss suffered during these halts enforced by the enemy's fire. How great was the defender's fire superiority is shown by the danger to which individual officers, etc., were exposed who showed themselves above cover (at the Modder River the English Guards remained lying down for 12 hours at 700 yards from the enemy, and 29 ammunition carriers were shot down). No attempt was made to extricate themselves by aimed fire, or to obtain fire superiority by means of reinforcements from the rear. On the contrary, frequently an unaimed and undisciplined fire was opened until the ammunition was completely exhausted, and not infrequently English troops laid down their arms in the open because they were not in a position to extricate themselves by flight from their difficult situation. During the second period, which came later, the author observes a slackening of energy in the attack in various actions—loose skirmishing lines remaining at long ranges, of from 1,200 to 2,000 yards, from the Boer's firing lines.

Captain Bernatsky is of opinion that in future the fight for fire superiority will not be conducted in the same manner as hitherto, that the firing lines will establish themselves at great distances from one another, where there is likely to be no immediate decisive result, that the infantry of both sides will cling to and fight upon the ground, as in the battles on the Sha-ho; but, on the other hand, they will seize every favourable opportunity of directing a hot fire on the enemy whenever he advances without cover, attempts to bring up reinforcements, or when he offers a good target by changes of position or retirements. That is also, in my opinion, the idea which led to the adoption of *rafale* firing in the French Manœuvre Regulations, a method of firing which I, contrary to most critics, consider to be absolutely correct. I will not hazard any opinion as to whether, as Bernatsky supposes, the final result will be unfavourable to the side which has first expended its ammunition. The envelopment of a flank, too, will frequently play a great *rôle*, and the author rightly observes: —"There, where mutual support does not extend to important extended bodies, and where forces remain available, even in the final operations, for employment at will on the flanks, a threat of envelopment of the enemy's flank will cause a crumbling away, which will gradually communicate itself to the whole of the enemy's line, so that a decisive result may be very rapidly achieved." In any case, however, success will depend on a thorough mastery of the technique of musketry, and also by its intuitive application free from all prescribed canons. Theory cannot dispense with the purely technical, that is to say, the practical, in the art of shooting, for the latter only can take the place of, or can properly apply, the experiences gained, which are either altogether lacking, or which only exist to a limited extent, in peace time.

The author then enters into considerations regarding "The Object and Nature of Musketry Instruction." Here, too, according to him, there exist two divergent opinions; the one relies on salvation by means of an iron fire-discipline, the other on the individuality of the marksman carried to its utmost extent. The training of the marks-

man, according to the former method, depends on a thorough subservience on the part of the marksman, which guarantees the prompt and strict execution of every order. This is only possible if the commands are of the utmost simplicity, and where their execution has become so much a matter of habit that they will not be disobeyed even in the most difficult situations. The different sorts of fire, such as volley and individual—the latter, too, may be slow, quick, or rapid—must be abandoned because they utterly fail in practice; the author, therefore, requires an individual fire of a uniform rate of rapidity "Short commands to open and cease firing will let loose a *rafale* fire of terrible intensity." The discontinuance of fire can be safely and rapidly effected, as experience has proved, by the repetition of the command from unit to unit.

In order to assign a firmer basis for these propositions, it should be observed that the accuracy of the modern rifle can only be realised by means of individual fire, that a great rapidity of fire gives a considerable prospect of success, that a uniform rate of fire ensures the control of the supply of ammunition, and that, finally, a marksman accustomed to this method of firing, finds in it a strong moral support which enables him to continue to fire with accuracy and without hurry.

I will pass over what is said further with regard to the training of the marksmen, and merely draw attention to one point. The author demands a restriction of the exaggerated safety regulations for field-firing practices, so that, for example, the movements of the skirmishing lines should be carried out with loaded rifles; that the men remaining behind should keep up their fire, whilst the others are rushing forward; and finally, that firing over their own troops should be practised at manœuvres by both artillery and infantry—this, of course, in only a limited fashion, and where the ground permitted of it.

On the other hand he expresses himself against a musketry training, by which a soldier may be taught to direct his fire himself, as this threatens the very foundations of fire discipline. That is absolutely conceded, especially as is urged on many sides that a man firing in a group should be permitted to change his aim and alter the already ordered distance on his sights on his own initiative. It is here a question of finding a good medium course; for, under certain circumstances, the individual soldier should be able to make independent use of his weapon.

The practical supervision of the firing should be taken altogether from the company commander, so that he may devote himself entirely to the tactical leading. The former should be relegated to the senior subaltern of the company, who should be responsible for the sighting, the objective and the commencement of the firing. He should observe the effect of the fire and regulate its cessation. I permit myself to express no opinion on this proposition, nor on the discussion following regarding details of the conduct of fire, as well as propositions for the arrangement and carrying out battle plans by means of fire-action.

From the above the reader will be convinced that we have here to do with a most remarkable work. The author has not only the courage to express his opinions, differing as they do from current views, and frequently even quite opposed to them; but he has also the ability to give good grounds for his opinions. One cannot ignore this work, which I regard as one of the most important on infantry

action in the fight; one is compelled to respect it. But I may be here permitted to make a few more remarks of a general character.

According to the generally accepted conception of the progress of the modern battle, the latter consists of several consecutive actions. During the first, after the preliminary contact, the artillery of both sides struggle for fire superiority; during which time the infantry completes its deployment. Then follows on the part of the victorious artillery, the preparation for the infantry assault at the place decided on, whilst on the other side, broods the "silence of the churchyard." The infantry now advance, also struggle for fire superiority, after which follows the assault.

This picture, which has, naturally, merely been sketched in rough outline, has undergone a considerable dislocation through the introduction of shield-protected, barrel-recoiling quick-firing guns. Many, it is true, will not allow this, but believe that the two great acts of the drama of the battle, viz., the artillery fight and the preparation for the assault, remain constant, whilst others, of whom I am one, are of opinion that after the introduction of protecting shields, there can no longer be any talk of an artillery duel ending in the complete defeat of one of the adversaries. To thoroughly crush armoured artillery would necessitate such enormous expenditure of both ammunition and time, that in future one will have to content oneself with reducing the hostile artillery to temporary inaction. It will, however, be always necessary to keep him occupied, and to watch him carefully, so as, when possible, to prevent him from changing position and from drawing on his reserve ammunition. A prolonged artillery conflict, with infantry looking on inactive, is no longer possible. Artillery fire will, as the French regulations say, be intermittent, that is to say, long pauses will be broken by *rafale* fire, which will seize favourable opportunities offered by an incautious enemy. The artillery of both sides will, so to speak, lie in wait and profit by every opportunity to damage the enemy. The picture, which Bernatsky draws, of the infantry fight, is precisely similar. Here, too, the taking thorough advantage of cover makes it impossible to completely crush the enemy in a long fire action; to attempt it would be equivalent to a useless waste of ammunition; here, too, it will be necessary to profit by favourable occasions, to do the enemy damage by means of *rafale* fire. To the side which best succeeds in holding the enemy fast to his position, and surprises him with superior forces against a weak point in his position (the flanks), will the victory belong.

It is with a certain satisfaction that I am able to state that I myself expressed similar ideas more than five years ago, especially as regards intermittent infantry fire.[1] Precisely the same idea has found expression in the last French Infantry Regulations. An intermittent fire of this description, which is only directed against favourable objectives, and is of short duration, will, in spite of the greater rapidity of the fire, permit of a far better husbanding of the ammunition, than a prolonged fire of less rapidity on unfavourable objectives.

I can emphatically recommend the thorough study, without prejudice, of "'The Problem of Fire Superiority"; on its solution the whole infantry fight entirely depends.

[1] "Das gefechtsmässige Abteilungsschiessen der Infanterie," 3rd Edition, 1899. Page 31.

OUR PRESENT INFANTRY ORGANISATION: A SUGGESTION.

By Captain C. A. L. YATE, King's Own (Yorkshire L.I.).

IT is generally conceded that the performances of our infantry during the South African Campaign were not up to standard required by modern war, and despite the splendid work done by certain regiments, its record was neither equal to its ancient reputation nor to that of some other branches of the Service, for instance, the Field Artillery. As the *personnel* of the last-named arm differs but little from that of the infantry, the peace training of the latter must be held accountable. Now, if there is one fact that stands out clearly in modern warfare, it is the all-importance of sound organisation, without which the most careful training is rendered largely nugatory. One of the senior British attachés with the Japanese Forces during the recent war, said to the writer:—"The main lesson of this war, which I shall continually impress on all I meet is: 'Organise, organise, organise!'" And so it is! The Germans in 1870-71, and the Japanese in 1904-05, owed their unbroken series of victories principally to a well-thought-out system, framed solely for war. In neither campaign (with all due deference to von Moltke) was the "master-hand" the chief factor of success, but rather the harmonious working together of all parts of the great military machine. A really good organisation enables mediocrity to achieve what even genius could not accomplish with an indifferent one.

The ideal organisation for war should, amongst other things:—

a. Be the best adapted for training troops.

b. Be economical.

c. Be elastic.

d. Allot to the different grades clearly defined and fairly apportioned duties and responsibilities.

Does our present infantry organisation fulfil these conditions? I think the almost unanimous opinion is that it does not.

Since the South African War, the question of 4 *versus* 8 companies to a battalion has been resuscitated, and some able articles have appeared on the subject, which, being a somewhat hackneyed one, will not be much discussed beyond briefly citing the generally accepted "pros" and "cons."

The advantages claimed for the 4-Company system are:—

1. The company is always large enough for practical training, even with low establishments and heavy "duties."
2. Companies are always commanded by experienced officers.
3. There is less chance of divergent methods of training, and consequently the task of the battalion commander is rendered easier.

4. There is less danger of centralisation in battalion headquarters.
5. All majors have a definite command, and one more in conformity with their rank.
6. The sections, being directly under officers, will be better instructed, and subalterns likewise will receive a responsible command very different to the somewhat mythical half-company ones.
7. Pay, and disciplinary duties will be entrusted to different non-commissioned officers, resulting in each class of duties being more efficiently carried out.

Finally the advocates of large companies point to their undoubted success abroad, and to the efficiency attained by the cavalry and mounted branches of the artillery respectively, under the squadron and battery systems.

The champions of small companies point out that (1) they are better fitted for mountain and bush warfare; and (2) that the Treasury would probably take advantage of the introduction of large companies to reduce the number of officers with a battalion.

This last objection is undoubtedly a weighty one, and is, no doubt, responsible for the continued non-introduction of the change as well as for the application of the term "Double-company" to the tentative organisations recently witnessed at Aldershot and in India.

As long as we continue:—

1. To burden our combatant officers with Boards, accounts, fatigues, and such-like duties, which, in the Navy and in other Armies are almost entirely relegated to non-combatant elements, or, in the case of the last-named duties, to those below officer's rank;
2. To remain without a real reserve of officers;

we must not allow the present establishment of officers to be reduced. With all these interior economy duties, and whilst company officers pay their men, 200 is rather a large number for one man to command. Lastly, the 4 field officers to command the large companies would presumably be mounted, entailing a further increase in expenditure, which might more profitably be diverted into other channels.

But whatever may be said against the change advocated, the present system is indefensible. Under it real and continuous battle-training becomes an impossibility, especially with the recently reduced establishments. Moreover, to give the command of a company of 50 "children" to a major of from 20 to 23 years' service, must have one of two effects: either he will become disgusted and listless, or he will arrogate to himself unauthorised powers (for the regulations recognise no intermediate position between company commander and second-in-command of the battalion). In the former case the company is virtually commanded by a subaltern, in the latter, friction is apt to result. Most infantry officers will have experienced one or both of the above-depicted results. Even captains soon lose heart, and the writer has heard several such remarks:—"If only I had a decent command in the regiment, I should not want to go away from it."

What is proposed in this paper is a six-company battalion; the present organisation of the French Chasseurs—models of efficiency,

and with a peace establishment much the same as ours, viz., some 700 of all ranks.

The following organisation is suggested as most suitable:—
Depôt: as at present.

A Battalion at home:—

Lieut.-Colonel	1
Majors	2
Captains	6
Subalterns	12
Total Officers (excluding staff)	21

A Battalion abroad:—

Lieut.-Colonel	1
Majors	2
Captains	6
Subalterns	18
Total Officers (excluding staff)	27

For a Two-Battalion Regiment with one Battalion abroad:—

Lieut.-Colonels	2
Majors	5
Captains	13
Subalterns	32
Total Officers (excluding staff)	52

Establishments of non-commissioned officers and men as at present.

Discussing this organisation, and beginning with the smallest unit—the section.* Two subalterns per company are allotted to a battalion at home, although it is proposed that companies invariably consist of 3 sections. This number is taken for purposes of economy, and so as not to alter the ratio between captains and subalterns. The colour-sergeant would command the third section on parade, in the absence of officers attached for instruction, whilst for discipline and interior economy it would be placed under the senior subaltern.

On mobilisation, the establishment would be completed by the addition of officers from the Depôt, Reserve officers (should we succeed in really forming such a class in sufficient numbers), subalterns of Militia, temporarily attached, or by promoting carefully selected warrant or non-commissioned officers.

In battalions abroad each subaltern would have his section, being responsible for it in the same way as artillery subalterns are now. It may be remarked here that the "division into 3" has always been considered a sound one for tactical purposes, whatever the size of a command; it enables a regularly constituted portion to be detached whilst still leaving the bulk as a serviceable unit in the commander's hands. As regards drill, all who have seen the working of the celebrated 3-section company column will realise its excellence. There would be much to be said, however, for the addition of a fourth

section to a company on mobilisation. This might consist entirely of reservists, or, should the services of Volunteer contingents be called on in future, as they were during the South African War, no better way could be found of utilising them than of forming sections to be attached to companies of Line regiments. In either case, such a distribution would conduce to simplicity and homogeneity; furthermore, by keeping together men who had previously served together, it would add to the mutual confidence, which is so important a factor on service. If large additions should be required to our Regular forces on the outbreak of war, as it seems certain they will be, such expansion should be sought by an increase of our somewhat low War Establishments, rather than by one of cadres. For this again, an elastic organisation is required.

In posting subalterns, the seniors of this rank in each battalion should, unless below the average in efficiency, be distributed amongst the companies. Beyond this, changes in the command of sections should be carried out as rarely as possible. The constant transferring of infantry subalterns from one company to another has the worst possible effect on training and general efficiency.

Turning to the company we find that under the proposed scheme all commanders are of the same rank—captain. Each would dispose of and command (deducting band, buglers, etc.) about 100, which is the minimum number required for efficient field training. Such training must be continuous throughout the year, and be realistic, *i.e.*, accustom officers to command units approximating in strength to those which they would lead in battle. Skeleton cadres, with the eternal imaginary which follows in their wake, disheartens the keenest spirit.

There does not appear to be any need for captains to be mounted; Russia and Japan both have large companies, but in neither Army are the commanders of these mounted. A commander should have the same vigour and endurance as his men, and since he must supervise his command on foot—aye, largely on his belly—in war-time, he should not be accustomed to doing so from on horseback. In Germany an officer has usually some 16 years' service before atttaining to company command, and is, moreover, at that period, far below the average of his British contemporaries in bodily "fitness." This fact must be considered equally with tactical and administrative reasons, in comparing the two countries' systems.

To the two majors would be allotted the important duties of:—

a. Supervising all regimental institutions.

b. Educating the junior officers.

In spite of all that has been done to take duties under *a* off officers' hands, the "institutions," like the poor, will be always with us. Their proper supervision, especially that of the Officers' Mess, is of prime importance, requiring undivided attention on the part of someone with authority and experience. It must not be left to somewhat jaded company officers, for these must give all their time and energy to training their men for war.

Regarding *b*, the increasing stiffness of professional examinations, and the abolition of garrison instruction, render a really methodical and comprehensive regimental system imperative. In a Japanese three-battalion regiment, two "attached" field officers are entrusted with the duties mentioned above. Instruction comprises such items

as framing schemes for, and conducting regimental tours and war-games, correcting papers, arranging lectures, distribution and care of maps, etc. These cannot all be carried out by two officers, both of whom have many other pre-occupations, such as the commanding officer and present second-in-command. It is not intended to confine instructional duties to the two majors; as the German Field Service Order says, the seniority of an officer is immaterial in such duties if he possess special qualifications. They would, however, systematise the work under the direction of the commanding officer. Again we see higher rank bringing with it new and increased responsibilities —the keynote of the proposed system. As regards drill, the present "Infantry Training" provides for two mounted majors on parade.

Should two or three out of the six companies go on detachment, one field officer would command them, the other continuing to discharge the duties outlined above, at headquarters. It may be objected that the change would involve a retardation in promotion to field rank. It is doubtful whether it would if, in battalions abroad at any rate, vacancies caused by majors extra-regimentally employed, were filled by promotions, instead of an extra captain being posted. Further, captains of 18 years' service might be given brevet rank to bring their promotion into line with that of other branches of the Service. The principle of selection might also be applied more rigidly in the case of this step, which is essentially, the one thus filled in the principal Armies abroad. In any case, the difference in pay between the two ranks at home is small, and of duties, practically nil. It is the incompatibility of the latter, rather than the smallness of pay, that takes the heart out of so many senior officers. If it were ruled that any officer who had done duty as a regimental major for two years at least (service at Depôt included), need not vacate a staff appointment except to take up the actual command of a battalion, a great boon would be conferred. Officers frequently have to give up appointments, quite recently taken up, in order to become second-in-command—"the worst billet in the Service" as a well-known officer remarked to the writer some years ago. Great personal inconvenience and detriment to the public service are the result.

Regarding non-commissioned officers, one of the four sergeants at present commanding sections would become company quarter-master-sergeant, the other three assisting officers in the command of sections.

Many of the above suggestions may be open to criticism, but it is claimed that they would result in:—

1. More efficient training.
2. Economy.
3. Smoothness of working.

The absolute necessity for some change in the present system, which so seriously clogs the efficiency of the British infantry, is a sufficient excuse for bringing the subject forward.

INFANTRY COMBAT IN THE RUSSO-JAPANESE WAR.

Observations and Personal Reminiscences of the Commandant of a Russian Company.

Translated by permission of the French Minister of War from the *Revue Militaire des Armées Etrangères.*

PROLOGUE.

THE notes on the Infantry Combat in the Russo-Japanese War, summarise the observations made by Captain Soloviev on the different actions in which he took part at the head of a company of riflemen from East Siberia (34th Regiment, 9th Division, 1st Corps of the Siberian Army), and make part of the extensive series of impressions and reminiscences carried home from the Far East by this officer. He gave an account recently of both at a meeting organised by the Petersburg group of the "Friends of Military Science"; it is from the text of this meeting, since published under the auspices of that Society, that we have extracted the following pages for the benefit of our readers.

It has appeared on examination that the observations of Soloviev would gain by being separated from a large number of supplementary considerations, those, for example, which treated of fortification on the battlefield, of the Boer system of entrenchments, of the utilisation of wire-netting, or of rough grass arranged for accessory defences, of the difficulties of the marches in Manchuria, the unsuitability of the Russian soldier's equipment, having regard to the circumstances of sun and climate, to the want of maps, from which resulted uncertainty at Headquarters, and errors of routes, of the patent treason of the interpreters and Chinese guides, etc. All these subjects present an interest alike less novel and less general than the reflections of the author speaking from his own personal experience as commander of a unit, and the text has, therefore, been curtailed, the order and form adopted by Captain Soloviev being, however, retained for the remainder.

"I have found by experience," he writes on the first page of his small work, "that much learnt in time of peace is useless in battle; inversely, it would be useful to know on the field of battle much that one has not previously acquired. . . . ." Reviewing according to this idea, and verifying by the light of experience all his former notions, the author concludes that the fundamental ideas and guiding principles of tactics have not changed; the artillery struggle, the infantry combat and the final assault are always the three essential and indivisible factors the sum of which constitutes battle.

The assault is, in his eyes, neither an advancing volume of fire, nor the approach of a line before which another line finally gives way through wear and tear and exhaustion; it is the crossing of bayonets, the shock of opposing bodies, and the hand-to-hand struggle. In Russia, of the old school, the bayonet is eulogised as the weapon of decisive results; it alone seems to him capable of giving troops subjected to the violence of modern fire that desire to advance in which safety lies, and will make them look for victory in a hand-to-hand struggle carried to a successful issue by sheer force of determination.

It is the theory pure and simple of Suvaroff and Dragomiroff. The examples given by the author are suitable for reviving this slightly old thesis; they will at least convince our readers that, in spite of the intensity of a fire which sometimes made it give way at the muzzle of the rifle, the Russian bayonet lost nothing of its ancient temper on the battle-fields of the extreme East.

I.

INFANTRY IN THE ZONE OF ARTILLERY FIRE.

The Surveillance of the Battle-field by the Japanese Artillery.

The action of artillery fire begins to make itself felt at 5 or 6 kilometres ($3\frac{1}{4}$—$3\frac{3}{4}$ miles) from the enemy. At these distances, the artillery is engaged against the hostile artillery, and only by chance turns its fire upon the infantry; nevertheless, if a considerable and massed body of men allows itself to be seen, one can wager that the Japanese artillery would not let the opportunity escape, and that the column would certainly be exposed to a relatively effective fire.

The surveillance of the Japanese artillery displays itself in a very remarkable fashion. On the 11th October, to the South of Muktden, I witnessed the following incident:—A battalion of Siberian Riflemen was to replace, in position, our regiment, which was told off for the attack. It was still light, towards five in the evening. The fire had diminished in intensity, both on the side of the Japanese as well as on our own. I swept the horizon with my glasses. All at once I saw very clearly, about one and a half kilometres (about a mile) in our rear, a column. It debouched slowly from behind a hummock, in column of sections, in an extensive field free from sorgho grass, which had been already reaped, and advanced in perfect order, as if manœuvring in time of peace. At its head, the battalion commander on his horse, then the adjutant-major and the leader of the 1st Company; behind them, the rest of the force. Suddenly there happened an inconceivable thing, and which contracted the heart of the most hardened witnesses.

It is necessary to note that about half-an-hour previously, a Japanese battery, which was in position in front of us, had brought up its limbers and had moved towards our flank. We had followed closely this change of position, and had seized the opportunity to open on it a violent fire, when it rapidly disappeared from sight, and gave no further sign of life. We had almost forgotten it, but from afar it had discovered the column which was coming towards us; it remained concealed, biding its time.

Scarcely had the first company of the column debouched on the plain, where it came completely into view, than it was completely and instantaneously enveloped in a cloud of smoke, caused by the bursting of shrapnel, a storm of which was let loose upon it. One could see the projectiles falling even in the middle of the column, encircle it as in a ring of fire, and light up the ranks. As soon as the head of the column gained the open ground, the enemy's projectiles accompanied it, without quitting the object for a second. For some minutes the column advanced in the middle of this smoke; but, as soon as it reached the shelter of a hummock, the fire ceased as if by magic. Behind it, there was stretched on the ground a line of black immovable objects; these few minutes had cost dozens of lives. In five or six minutes, the enemy—we could count them approximately—fired not less than 60 shrapnels. The other companies crossed the danger zone on the run, and in the ordinary formation of the Siberian troops, without mishap.

In war, every fault, every piece of negligence, is atoned for on the field, and often very severely.

The March of Infantry Under Artillery Fire.

The movements of infantry at distances, comprised between 5 and 3 kilometres ($3\frac{1}{4}$—2 miles), are ordinarily made in column of route in fours or in column of half-sections.

Starting from 3 kilometres (2 miles), the fire of artillery becomes very accurate and effective, the losses become very considerable, notably on exposed ground, should one continue to advance in this formation. One breaks up then into fractions and advances, taking shelter behind the hummocks, along the interior slope, as behind a covering mass; a single shrapnel falling true can, nevertheless, cause serious havoc. In fine, the best method of advancing with any safety is not to allow oneself to be seen.

From the moment that it becomes necessary to cross an exposed zone, then the movement, not only in column but in extended order, becomes impossible, owing to the accuracy of modern artillery fire.

The troops which arrived from Russia paid many times very dearly for their want of knowledge of the formation adopted by the Siberian troops for infantry crossing open country under artillery fire.

This formation is in Indian file at ten paces interval. The men run stooping, as fast as they can, and utilising as much as possible the least inequality of the ground. It is well that the leading man should be trained to choose the sinuous line most advantageous to follow. The leader of the file is generally a non-commissioned officer, or sometimes even an officer.

The Limit of Rifle Action.

Another question which presents itself, *à propos* of movements in the zone of artillery fire, is, that of the distance starting from which infantry begin to make its action felt. My opinion is, that one can obtain a collective fire sufficiently effective, starting at 2,700 paces; and it is a truth I have many times maintained.

My company, one day, received orders to oppose a Japanese battery, whose position, as always, was hidden from our view by a small crest.

We opened fire at a range of 2,700 paces, by section volleys. One could see distinctly with glasses the dust hanging about the crest after each volley. It was clear that the men aimed well. But the Japanese battery furnished us with a still better proof of the efficacy of our fire. After having stood it for half-an-hour without replying, it opened upon us suddenly, first with shell and then shrapnel. The bursting of the projectiles made such a noise that it became necessary to pass to magazine fire. The situation of the company under this fire became critical, when, fortunately, a Russian battery came to our help. The Japanese battery despised us at first, then kept complete silence.

Special Remarks on the Japanese Artillery.

As a rule, the Japanese cease their fire when they see that the fire is aimed against them; this practice is common, both to their infantry and artillery.

The cessation of fire under an adversary's fire, which has accurately got the range, seems to have been established with them as a principle. From the moment when one of our batteries got the range of a Japanese one, the enemy's became silent, and attempted surreptitiously to change its position. Their lines of skirmishers did the same. In order to hide their changes of position, they left on the broken wheels dummy guns and figures. But we found out these ruses. The dummies betrayed themselves, because they were placed too much in evidence, and standing upright, while the Japanese never remains motionless and upright under fire; he makes a rapid jump and hides himself at once.

We have, in these respects, profited by example. Our batteries also stop firing when the enemy has got the range, and change their position. Our gunners explained to me that they considered a cessation of fire as necessary in this case, because the men could not lay the guns quietly, and regulated the fuses badly; it became preferable to change the position of the battery, or make the men retire into the trenches until the enemy's battery should have turned its fire on another object, or should have ceased firing in the belief that it had crushed its opponent. One seized this opportunity to send him a *rafale*.

What is better still than a change from one position to another better sheltered is to find emplacements from the first, sufficiently well-concealed, that the enemy cannot mark the position of the battery. Sometimes a gun is advanced to a crest, which it is not proposed to occupy, and a rapid fire is opened with it. The battery itself occupies another position. When the enemy begins to reply to the fire of the single gun, one attempts to get an indication of his position to fix the range, and when that has been more or less certainly obtained, to overwhelm his battery by a hail of projectiles.

Before the enemy recovers himself, has discovered the spot from whence the blows come, and has adjusted his own fire, he has sometimes sustained such considerable losses that he can only leave his position or send his men to take cover.

In general, that one gets the advantage who has succeeded in opening fire by surprise. Here, it is not only the sense and knowledge of military requirements which are of importance; skill, presence of

mind, and subtlety are also necessary. It is a case of who succeeds in deceiving the other; who is the most cunning.

The infantry combats gives occasion for somewhat similar remarks. Sometimes, under a violent artillery fire, the line of skirmishers is left to creep, without being noticed, on the slopes in rear, and come together in a well-concealed and covered spot, leaving only a few men on the position; or it creeps, without being perceived, into another position, whilst the enemy's battery continues to fire into space.

The Japanese expenditure of projectiles is colossal, but it is far from always bearing fruit. Thus, at Liao-Yang, a Japanese battery covered with its projectiles, for two hours, a piece of ground, on which there was only an officer left in observation. The fire, according to the report of an eye-witness, was so violent that all the soil in the neighbourhood was ploughed up by the projectiles, as on a field for sowing. Under the system of firing adopted by the Japanese artillery, similar cases of the waste of an enormous amount of ammunition are not rare.

A case occurred, for example, at Tachitshao, where the Japanese artillery had to remain silent because it had exhausted all its ammunition.

For fire against troops, shrapnel is incontestably the most effective projectile; it is very difficult to get away from the zone of dispersion of its bullets. The ordinary shelter trenches for the men firing lying down, or kneeling, offer only a feeble protection. The best shelters against shrapnel are the trenches dug out for men firing standing.

The bursting shell, charged with "Shimose," of which one hears so much, is of little use against living targets; its splinters are very minute, almost a dust. On the other hand, if it produces little real effect, it explodes with a great noise; there is a torrent of black smoke, of stones and of fire, which are thrown up from the earth and make a great impression on men not inured to them. The moral effect is incontestable. With regard to lyddite projectiles, the action of their gas is very noxious, and the cause of serious and prolonged diseases. The effect, in general, does not show itself at once, but only after some days; it involves the loss of hearing, of smell, of taste, of sight, paralysis and prolonged fainting. Recovery is very slow; it remains to be learnt whether it is permanent. The lyddite projectile may be known by its yellow-greenish smoke, and its extremely disagreeable smell at the moment of bursting.

Parallel Between the Japanese and Russian Artillery.

One hears a great deal of the accuracy of fire of the Japanese artillery. It has been attributed to the skill of the Japanese gunners, as well as to their knowledge of ground and the special conditions of mountain warfare. It is also asserted that they have excellent maps, which permit of their determining distances by means of compasses with great accuracy.

In any case, one cannot explain this accuracy by the superiority of their *matériel* over ours, our gunners being unanimous that our gun is excellent and better, without fear of contradiction, than that of the Japanese. Only the Japanese, for some years past, have been accustoming themselves to their gun, while with us many of our batteries have only become acquainted with their weapon, while *en*

route to the front, the men receiving their first instruction while in the carriages.

As a general rule, one must admit that the accuracy of the Japanese fire is incontestable. More than once, we have had occasion to remark that the Japanese batteries have reached their object at the first shot, without any ranging shots. I recollect that, on one mound which we occupied, a Japanese battery reached our chain of skirmishers at the first discharge. I have seen Japanese shrapnel shells follow as on a trail a group of mounted "Okhotniki,"[1] who passed over a crest at full gallop and place rapidly *hors de combat* 12 men and 19 horses. I have seen one of our batteries in the first half-hour of fighting lose 2 officers and 32 men.

It is also to be remarked with what care and what intelligence the Japanese batteries follow their infantry when engaged, and how energetically they support them, not only when they are exposed to the fire of the enemy's guns, but also when they begin to suffer from the fire of a line of skirmishers of any kind. The Japanese batteries immediately direct a violent fire on this position, in order, like good comrades, to assist their infantry.

Our artillery found itself faced with new conditions, which were absolutely foreign to it. Accustomed in time of peace to take up positions on the crests of hills, it suffered during the earlier battles enormous losses, without inflicting any on the enemy. However, it soon learnt to adapt itself to the new conditions of fighting.

A completely new factor for it was firing at an unseen target. However, outside Mukden, we several times had occasion of proving that our batteries had got the better of the Japanese ones. The fire of these was, relatively, less violent than at Liao-Yang; nobody was in a better position to observe this than the infantry. The experience of previous battles led us to fear, above all, that our artillery would cease firing, because we knew that from that moment nothing would prevent more Japanese artillery from opening on the positions occupied by our skirmishers, and inflicting on us, as usual, some enormous losses.

In conclusion, it is only fair to remember that our artillery had to face very difficult conditions, and that it succeeded in extricating itself with honour.

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[1] Infantry Scouts.

(*To be continued.*)

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—J. M. de Robeck to "Carnarvon"; W. de Salis, M.V.O., to "Jupiter"; F. C. Ogilvy to "Revenge"; E. M. Phillpotts to "Grafton"; W. C. Pakenham, C.B., to "Antrim"; H. H. Stileman to "Andromeda"; E. H. Mowbray to "Vindictive"; R. F. Scott, C.V.O., to "Victorious"; J. Nicholas to "Hecla"; N. C. Palmer to "Royal Arthur"; C. A. Christian to "Highflyer."

The first-class battle-ship "Implacable" arrived on the 4th ult. from the Mediterranean. She paid off on the 9th ult. at Devonport, recommissioning on the following day for a further term of service, and left again on the 18th ult. to rejoin the fleet in the Mediterranean. The first-class battle-ship "Swiftsure" paid off on the 16th ult. at Chatham and recommissioned the following day for a further term of service with the Channel Fleet.

The first-class cruiser "Andromeda," recently returned from China, paid off on the 16th ult. at Portsmouth. The first-class cruiser "Terrible" left Plymouth on the 25th ult. for China, taking out new crews for the second-class cruiser "Astræa," the despatch-vessel "Alacrity," and other reliefs for the station.

The "Montagu."—It is officially announced by the Admiralty that no further attempts at floating the ship will be made; all the salvage appliances, etc., have been removed, and the wreck will be sold.

Memorandum Explanatory of the Programme of New Construction for 1905-1906, with Details not Included in the Navy Estimates for 1906-1907.—The Board of Admiralty, having approved of the leading principles to be embodied in the various types of vessels, appointed a Committee of Naval and scientific experts of large and varied experience as an advisory board to assist them in coming to a conclusion upon various important features in connection with these types.

In the instructions to the Committee it was clearly stated that it was "no part of the function or purpose of the Committee to relieve the Director of Naval Construction of his official responsibility for the design of the ships."

Having carefully examined and discussed various types of battle-ships and armoured cruisers, and having had six alternative designs of each class under consideration, the Committee unanimously decided to recommend the designs which, after the conclusions of the Committee had been further discussed with the Commanders-in-Chief of the Channel and Atlantic Fleets, in January, 1905, and concurred in by them, were ultimately adopted.

The principal dimensions of the designs, together with those of the destroyers, are shown in the accompanying table in the form usually submitted to Parliament with the Navy Estimates.

The principal features of the "Dreadnought" design, which has now been built to, are as follows:—

Armament.

Ten 12-inch guns and twenty-seven 12-pounder Q.F. anti-torpedo-boat guns and five submerged torpedo-tubes.

In arranging for a uniform armament of 12-inch guns, it became at once apparent that a limitation to the number of guns that could be usefully carried was imposed by considerations of the blast effect of the guns on the crews of those guns adjacent to them. It is obviously uneconomical to place the guns in such relative positions that the blast of any single gun on any permissible training should very seriously hamper the use of one or more of the remaining guns.

While it is recognised that broadside fire is held to be the most important in a battle-ship, all-round fire is also considered of great importance, since it lies in the power of an enemy to force an opponent, who is anxious to engage, to fight an end-on action.

In the arrangement of armament adopted, six of the guns are mounted in pairs on the centre line of the ship; the remaining four guns are mounted in pairs on the broadside. Thus, eight 12-inch guns (80 per cent. of the main armament) can be fired on either broadside, and four, or possibly six, 12-inch guns (or 60 per cent. of the main armament) can be fired simultaneously ahead or astern.

In view of the potentialities of modern torpedo craft, and considering especially the chances of torpedo attack towards the end of an action, it is considered necessary to separate the anti-torpedo-boat guns as widely as possible from one another, so that the whole of them shall not be disabled by one or two heavy shells. This consideration led the Committee to recommend a numerous and widely distributed armament of 12-pounder Q.F. guns of a new design and greater power than those hitherto carried for use against torpedo craft.

In order to give the ship good sea-going qualities and to increase the command of the forward guns, a forecastle is provided, giving the ship a freeboard forward of 28 feet—a higher freeboard than has been given to any modern battle-ship.

The main armour belt has a maximum thickness of 11 inches, tapering to 6 inches at the forward and 4 inches at the after extremity of the vessel; the redoubt armour varies in thickness from 11 inches to 8 inches; the turrets and fore conning-tower are 11 inches thick, and the after conning-tower is 8 inches thick; the protective deck varies from 1¾ inches to 2¾ inches in thickness.

Special attention has been given to safeguarding the ship from destruction by underwater explosion. All the main transverse bulkheads below the main deck (which will be 9 feet above the water-line) are unpierced except for the purpose of leading pipes or wires conveying power. Lifts and other special arrangements are provided to give access to the various compartments.

Mobility of forces is a prime necessity in war. The greater the mobility the greater the chance of obtaining a strategic advantage. This mobility is represented by speed and fuel endurance. Superior speed

also gives the power of choosing the range. To gain this advantage, the speed designed for the "Dreadnought" is 21 knots.

The question of the best type of propelling machinery to be fitted was also most thoroughly considered. While recognising that the steam turbine system of propulsion has at present some disadvantages, yet it was determined to adopt it because of the saving in weight and reduction in number of working parts, and reduced liability to breakdown; its smooth working, ease of manipulation, saving in coal consumption at high powers, and hence boiler-room space, and saving in engine-room complement; and also because of the increased protection which is provided for with this system, due to the engines being lower in the ship—advantages which much more than counterbalance the disadvantages. There was no difficulty in arriving at a decision to adopt turbine propulsion from the point of view of sea-going speed only. The point that chiefly occupied the Committee was the question of providing sufficient stopping and turning power for purposes of quick and easy manœuvring. Trials were carried out between the sister vessels "Eden" and "Waveney," and the "Amethyst" and "Sapphire," one of each class fitted with reciprocating and the other with turbine engines. Experiments were also carried out at the Admiralty Experimental Works at Haslar, and it was considered that all requirements promise to be fully met by the adoption of suitable turbine machinery, and that the manœuvring capabilities of the ship, when in company with a fleet or when working in narrow waters, will be satisfactory.

The necessary stopping and astern power will be obtained by astern turbines on each of the four shafts. These astern turbines will be arranged in series, one high and one low pressure astern turbine on each side of the ship, and in this way the steam will be more economically used when going astern, and a proportionally greater astern power obtained than in the "Eden" and "Amethyst."

The ship has a total coal bunker capacity of 2,700 tons, and with this amount of coal she will be able to steam about 5,800 sea miles at economical speed, and about 3,500 sea miles at 18½ knots, after allowance has been made for bad weather and for a small amount of coal being left in the bunkers. Stowage for oil fuel has been arranged for, but oil fuel has not been taken into account in estimating the radius of action, which of course will be greatly increased thereby.

Considerable attention has been devoted to the arrangements for the accommodation of the officers and men. In view of the increasing length and greater power of modern ships, the usual position of the admiral's and captain's quarters right aft is becoming more and more open to objection. Up to the present the principal officers have been berthed at the farthest possible distance from the fore bridge and conning-tower, where their most important duties are performed. It has been decided that in this ship the admiral's and captain's quarters shall be placed on the main deck forward, near the conning-tower; also that the officers' quarters shall be placed forward, both on the main deck and on the upper deck, in the fore part of the ship. Ample accommodation for the remainder of the crew is available on the main and lower decks aft.

"Invincible" Class.

No corresponding description is given of the new cruisers of the "Invincible" class referred to in the opening paragraphs of the

Memorandum; but in the tables annexed to the Memorandum the principal dimensions of these vessels are given, together with some other details, not including the thickness of the armour nor the nature of the armament, nor the I.H.P., with the corresponding speed to be attained. It is interesting to compare the "Dreadnought" with the "Invincible" in respect of such details as are given, and the following table will facilitate this comparision :—

Dreadnought.	Invincible.	Nature of details compared.
490	530	Length in feet.
82	78½	Beam in feet.
26½	26	Mean load draught in feet.
11,100	9,660	Weight of hull, including armour and backing, in tons.
17,900	17,250	Displacement at load draught in tons.
900	1,000	Coal capacity at load draught in tons.
1,797,497	1,736,645	Total estimated cost of ship, including guns in £.

Thus the "Invincible," while 40 feet longer than the "Dreadnought," has 3½ feet less beam, and her draught is only 6 inches less. Her weight of hull is 1,440 tons less, though her total displacement is only 650 tons less. She carries 100 tons more coal at load draught, and, as her speed is doubtless considerably greater, involving increased weight of engines and boilers, though not necessarily in like proportion, in view of her greater length and presumably finer lines, it seems to follow that her armour and armament must be appreciably lighter than those of the battle-ship. But these details are not disclosed. The significant facts remain that the displacement of the cruiser is very little less than that of the battle-ship, and that her total cost, approximating to a million and three-quarters, is only some £60,000 less.

Similar details are given for the first time in the tables concerning the destroyers and submarines of last year's programme; but these, with one exception, need not engage our attention here. The exception is the "Swift," a destroyer of special type and of an entirely novel and very remarkable character. She is to have a length equal to that of the "Nile" and "Trafalgar," battle-ships which, though completed in 1890, are still in commission in reserve, a displacement more than double that of many of the still surviving torpedo-gunboats, and not much less than that of the "Pelorus" class of cruiser, an I.H.P. equal to that of the "Drake," a speed faster than that of any vessel afloat, and she is to cost more than the ships of the very costly "Scout" class. The following table gives certain comparative details, which will, we think, be found very instructive. The "Cossack" is the largest of the new "ocean-going" destroyers, the "Adventure" is one of the "scouts," and the "Pelorus and "Amethyst" are two third-class cruisers, which seem to afford some useful points of comparison, though, of course, all these vessels differ largely in type and function from the "Swift":—

Cossack.	Adventure.	Pelorus.	Amethyst.	Swift.	Nature of details compared.
270	374	300	360	345	Length in feet.
26	38¼	36¼	40	34 1-6	Beam in feet.
7 5-6	13½	17	14½	10 5-12	Mean load draught in feet.
290	—	—	—	760	Weight of hull in tons.
795	2,940	2,135	3,000	1,800	Displacement at load draught in tons.
14,000	15,850	7,000	14,200	30,000	I.H.P. on contractors' trial with forced draught.
33	25·42	20	23·42	36	Corresponding speed in knots in like conditions.
76	150	250	300	180	Coal (including oil) capacity in tons.
143,340	270,263	154,315	228,426	280,509	Total estimated cost including guns in £.
Three 12 pr.	Ten 12-pr., eight 3-pr.	Eight 4 in., eight 3-pr., 2l.	Twelve 4-in., eight 3-pr.	Four 4-in.	Armament.

—*Times, etc.*

FRANCE.—The following are the principal promotions and appointments which have been made: Capitaines de Vaisseau—F. P. Arago, J. L. Le Pord to be Rear-Admirals; L. Lormier to "Descartes" and as Senior Officer of the Indian Division; A. A. Tracou to "D'Entrecasteaux." Capitaines de Frégate—E. F. A. Fournier to "Alger"; J. F. Amet to "Guichen"; A. F. Laugier to "Bombarde" and Command of Destroyer Flotilla of the Squadron of the North; J. E. Paillet to "Marigot" and Command of the Naval Station of Senegal; J. I. Bonnet to "Algéciras."—*Journal Officiel de la République Française.*

General.—Orders have been received at Brest for the commencement of the new first-class battle-ship "Danton," the first of the 1906 programme. Her displacement is 18,000 tons, I.H.P. 22,000, and speed 19 knots. She is to be armed with four 305-mm. (12-inch) guns, twelve 240-mm. (9·4-inch) guns, sixteen 75-mm. guns, and two submerged torpedo tubes.

The destroyer "Claymore," built at Havre, has had her official trials at Cherbourg, realising 30·33 knots, the contract speed being 28 knots. The trial was considered very satisfactory.

The two submarines, "Gnôme" and "Lutin," have arrived at Bizerta.

The Engineer Branch.—By a decree of 24th June the relative ranks of the engineer branch of the Navy have been determined as follows:—

Inspector-General, 1st class, Pont et Chaussés—Vice-Admiral.
Inspector-General, 2nd class—Rear-Admiral.
Engineer-in-Chief, 1st class—Capitaine de Vaisseau.
Engineer-in-Chief, 2nd class—Capitaine de Frégate.
Engineer, 1st class—Capitaine de Corvette.
Engineer, 2nd class—Lieutenant.
Engineer, 3rd class—Enseign de Vaisseau.
Eléve Ingénieur—Aspirant, 1st class.

The Navy Estimates. — M. Thomson, Minister of Marine, has explained to the Parliamentary Commission of the Navy that the reduction of 7 million francs (£280,000) which he proposes in the Estimates will not affect the efficiency of the fleet. There will be an increase of 2 million francs (£80,000) for arming the new vessels being brought forward for service, namely two battle-ships and one armoured cruiser of the 1900 programme, for the trials of the four other battle-ships, and for the working of the new school of target practice; and there will also be an increase of 4 million francs (£160,000) for munitions of war and torpedoes.

The greater part of the saving of 15 million francs (£600,000) will be effected in the vote for new constructions by the delay in the commencement of the six new battle-ships owing to the pending question as to whether these ships should be fitted with turbine engines, a special committee having been sent to England to study this question.

THE MANŒUVRE FLEET.

The fleet assembled under the command of Admiral Fournier was finally organised as follows :—

1st Squadron (Vice-Admiral Fournier Commanding-in-Chief.)

Battle-ships—"Brennus" (flag-ship), "Hoche," "Charles Martel," "Requin," "Indomptable," "Caïman."

Light Division—"Alger," "Lahire," "Claymore."

2nd Squadron (Vice-Admiral Touchard.)

Battle-ships—"Suffren" (flag-ship), "Saint Louis," "Charlemagne," "Jéna," "Bouvet," "Gaulois."

1st Light Squadron—"Jeanne d'Arc," "Kléber," "Du Chayla," "Lalande," "Galilée."

Destroyers—"Mousqueton," "Arc," "Arbalète," "Carabine," "Sarbacane," "Dard."

3rd Squadron (Vice-Admiral Gigon.)

Battle-ships—"Masséna" (flag-ship), "Carnot," "Jauréguiberry," "Bouvines," "Amiral Tréhouart," "Henri IV."

2nd Light Squadron—"Gloire," "Léon Gambetta," "Amiral Aube," "Forbin," "Cassini."

Destroyers—"Bombarde," "Flamberge," "Catapulte," "Batiste," "Bélier," "Arquebuse."

The following vessels were told off to represent the enemy in the battle exercises :—"Dard," "Galilée," "Sarbacane," "Lalande," "Arbalète," "Alger," "Catapulte," "Forbin," "Bélier," "Cassini," "Arquebuse."

Cruisers and destroyers thus alternated in a line, the length of which was 6,000 mètres, the distance between two adjacent units being 600 mètres.

New Distribution of the Fleet.—Mediterranean :—All the best battle-ships are to be concentrated in the Mediterranean, as well as 3 good cruisers, recalled from the squadrons in the Far East.

Northern Squadron :—To be composed of the 3 best armoured cruisers, the coast-defence battle-ships, and 3 older battle-ships, to replace the "Messéna," Jauréguiberry," and "Carnot."

1ST SQUADRON (MEDITERRANEAN).—To be kept all the year fully manned in commission, commanded by a vice-admiral, with two rear-admirals, as divisional commanders.

Battle-ships :—"Suffren," "Jéna," "République," "Patrie," "Saint Louis," "Gaulois."

Armoured cruisers :—"Gloire," "Condé," "Amiral Aube."

Repeating-ship :—"Du Chayla."

2ND SQUADRON (RESERVE MEDITERRANEAN).—To be kept all the year with crews appropriated under a rear-admiral, with two capitaines de vaisseau under him as divisional commanders.

Battle-ships :—"Masséna," "Carnot," "Jauréguiberry," "Charles Martel," "Bouvet," and "Charlemagne."

Armoured cruisers :—"Montcalm," "Amiral Gueydon," "Dupetit-Thouars."

Repeating-ship :—"Galilée."

3RD SQUADRON (NORTHERN SQUADRON).—To be kept for 6 months fully manned in commission and six months with reduced crews, under a vice-admiral, with two rear-admirals as divisional commanders.

Battle-ships :—"Formidable," "Amiral Baudin," "Devastation."

Coast-defence battle-ships :—"Henri IV.," "Bouvines," "Amiral Tréhouart."

Armoured cruisers :—"Jules Ferry," "Leon Gambetta," "Victor Hugo."

Repeating-ships :—"Cassini" and "Forbin." Six destroyers.

RESERVE DIVISION OF THE 3RD SQUADRON.—To be kept with crews appropriated under a rear-admiral.

Armoured cruisers :—"Marseillaise," "Dupuy de Lôme," "Desaix."

DIVISION OF THE FAR EAST.—Under a rear-admiral, Commander-in-Chief.

First-class cruiser :—"D'Entrecasteaux," "Descartes."

Armoured cruisers :—"Bruix," "Chanzy."

Six destroyers, gun-boat "Décidée," aviso "Manche," and three light-draught gun-boats.

RESERVE DIVISION (FAR EAST) :—

Battle-ship :—"Redoutable."

Armoured gun-boats :—"Styx" and "Acheron," with the despatch-vessel "Kersaint," and the gun-boat "Cométe."

ATLANTIC DIVISION.—Under a rear-admiral, Commander-in-Chief.

Armoured cruiser :—"Dupleix."

Cruisers :—"Chateaurenault" and "D'Estrées."

INDIAN OCEAN DIVISION.—Under a capitaine de vaisseau.

Armoured cruiser:—"Kléber," with the despatch-vessel "Rance," and the gun-boat "Surprise."

DIVISION OF THE PACIFIC.—Under a capitaine de vaisseau.

Cruiser :—"Catinat," with the despatch-vessel "Vaucluse," and the gun-boat "Lélée."

NEWFOUNDLAND DIVISION.

Cruisers :—"Chasseloup-Laubat," "Lavoisièr."

No change in the gunnery and school-ships, except, as previously mentioned, the addition of the "Pothuau" to the gunnery school for target practice, and the replacing of the old aviso "Elan," attached to the school for pilots, by the new aviso "Chamois."

The "Defense Mobile" Flotillas for 1906. — In principle a torpedo-boat flotilla consists at the present time of a certain number of training torpedo-boats kept permanently in commission with full effectives, manœuvring with a destroyer (as leading divisional boat), and under the supreme command of the commandant of the flotilla (an officer holding the grade of capitaine de frégate), who will fly his senior officer's pennant in an aviso or destroyer. Attached to these commissioned boats will be one or two divisions for active service (divisions offensives) composed of the best units and manned on the footing of *en disponibilité*, which, in the event of war, will be immediately fully commissioned by the crews of the training boats; they will be the first to proceed to sea, with a destroyer as *divisionaire*. Each "offensive division" consists of six first-class or sea-going torpedo-boats. These last are all commanded by lieutenants; the first-class torpedo-boats are partly commanded by lieutenants, partly by warrant officers in the home flotillas and by sub-lieutenants abroad. The six torpedo-boats of a division form three sections of two units each, which are always commanded by a lieutenant.

Channel Flotillas.

First flotilla at Dunkirk: In commission—destroyer "Durandal" as divisional boat; 6 first-class torpedo-boats and 1 torpilleur de haute mer, all *en disponibilité* for active service. In reserve—4 first-class torpedo-boats.

Second flotilla at Cherbourg: In commission—torpedo-aviso "Bombe" (senior officer's ship of flotilla); 6 training first-class torpedo-boats; a torpilleur de haute mer, the "Archer," and a first-class boat as training school for quartermaster-pilots; a torpilleur de haute mer, the "Zouave," and a second-class boat as training school for stokers.

En disponibilité—2 destroyers as divisionaires, the "Yatagan" and "Harpon," and 12 first-class torpedo-boats; that is 2 complete offensive divisions.

In reserve—12 first-class and 2 second-class torpedo-boats. Specially commissioned for duty with submarine flotilla—a second-class torpedo-boat.

A total of 3 avisos and 37 torpedo-boats.

Third Channel flotilla (Saint Servan, dependant on Brest from the administrative point of view): The torpilleur de haute mer "Lancier," acting both as divisionaire and head of the Granville Fishery Station; 3 training torpedo-boats in commission; 3 others *en disponibilité*. There is an increase here of two units for the *défense-mobile*, these constituting a complete tactical division.

Ocean Flotillas.

First flotilla, Brest: In commission — The torpedo-aviso "Salve" (senior officer's ship); 4 first-class and 2 second-class training torpedo-boats; two torpedo-boats for the School of Pilotage, the "Tourbillon" and another, and the "Véloce" and 1 second-class boat for stoker training.

En disponibilité—The destroyers "Fauconneau" and "Escopette"; 6 torpilleurs de haute mer of the "Mistral" class, and 6 first-class torpedo-boats.

In reserve—3 torpilleurs de haute mer, 11 first and 4 second-class torpedo boats.

Depôts—Lézardrieux, with the pontoon-ship "Rhine," which is to be replaced by a station on shore, fitted with a floating stage for mooring the boats to; Aberwrach, with the pontoon-ship "Obligado."

Second flotilla, Lorient: In commission—Torpedo-aviso "Lance" (senior officer's ship); the "Défi," school for pilotage, and 4 first-class training torpedo-boats.

En disponibilité—The destroyer "Sagaïe," as divisionaire, and 8 first-class torpedo-boats.

In reserve—8 first and 4 second-class torpedo-boats.

Depôts—La Trinité, with the pontoon-ship "Crocodile"; Le Rocher, shore station in the river Auray; Concarneau, post on shore; Saint Nazaire, post on shore.

Third flotilla, Rochefort: In commission—Torpedo-aviso "Conleuvrine" (senior officer); torpilleur de haute mer "Grondeur," school for pilotage; 3 first-class training torpedo-boats.

En disponibilité—Destroyer "Epieu," as divisionaire; 6 first-class torpedo-boats.

In reserve—8 first-class and 2 second-class torpedo-boats.

The reserve here has been strengthened, as the flotilla has for its principal duty the defence of the Trousses and Gironde roadsteads; while the station at La Pallice is especially important for the submarines.

The first flotilla of the Mediterranean, Toulon: In commission—Torpedo aviso "Dragonne" (senior officer); 2 torpilleurs de haute mer for school of pilotage; 2 for stoker training; 4 first-class and 2 second-class training torpedo-boats.

En disponibilité—2 destroyers, the "Hallebarde" and "Pertuisane," as divisionaires; 12 first-class torpedo-boats, as at Cherbourg.

In reserve—4 torpilleurs de haute mer; 15 first-class and 5 second-class torpedo-boats. Specially commissioned for service with the torpedo and submarine schools—2 first-class and 5 second-class boats, with a vedette boat.

Central station—Port Vendres, with the "Fawne" as depôt pontoon-ship; subsidiary stations at Marseilles, Golfe Juan, and Villefranche.

Second Mediterranean flotilla, Ajaccio: In commission—Torpedo-aviso "Lévrier" (senior officer); 6 first-class training torpedo-boats.

En disponibilité—The destroyer "Epée" and torpilleur de haute mer "Chevalier" as divisionaires; 12 first-class torpedo-boats. In all, two complete offensive divisions and a harbour division, which, with the submarines, makes Corsica an important centre of the *défense-mobile*, able to join hands with Toulon and, on occasion, with Bizerta.

Third Mediterranean flotilla, Bizerta: In commission—The destroyer "Dunois" (senior officer); 2 torpilleurs de haute mer for school of pilotage; 6 first-class boats as training division.

En disponibilité — The destroyer division (6 boats) of the Active Squadron of the Mediterranean, "Arc," "Mosqueton," "Arbaléte," "Sarbacane," "Dard," and "Carabine"; 8 torpilleurs de haut mer; and 8 first class boats, exclusive of submarines.

Fourth Mediterranean flotilla, Algiers: In commission—The destroyer "Pique" (senior officer); 4 training torpedo-boats.

En disponibilité—A torpilleur de haute mer as divisionaire and 8 first-class torpedo-boats.

Fifth Mediterranean flotilla, Oran: The torpedo-aviso "Léger" (senior officer); 6 first-class torpedo-boats as training division.

En disponibilité—A destroyer as divisionaire and 8 first-class torpedo-boats.

It is believed that in view of the important strategic position of Oran a division of destroyers and submersibles will eventually be stationed there.—*Le Yacht, Le Temps,* and *Le Moniteur de la Flotte.*

GERMANY.—*The Estimates for 1906.*—The Estimates for 1906 amount to 253,456,685 marks (£12,672,834 5s.), as against 235,618,205 marks (£11,780,910 5s.) voted for 1905, showing an increase of 17,838,480 marks (£891,924 10s.). The following are the principal items :—

ORDINARY PERMANENT ESTIMATES.

	Proposed for 1906.			Voted, 1905	
	Marks.	£	s.	£	s.
Imperial Ministry of Marine and Naval Cabinet	1,793,210	= (89,660	10)	82,498	10
Naval Headquarter Staff	332,060	(16,603	0)	11,898	5
Observatories, etc.	356,384	(17,819	4)	17,986	4
Station Accounts Department	578,900	(28,945	0)	23,552	0
Legal Department	168,800	(8,440	0)	7,111	0
Chaplains' Department and Garrison Schools	135,076	(6,753	16)	5,598	2
Pay of Officers and Men	27,045,944	(1,352,297	4)	1,213,772	12
Maintenance of Fleet in Commission	28,630,460	(1,431,523	0)	1,334,534	5
Allowances for Officers and Men	2,065,304	(103,265	4)	87,157	18
Clothing	412,358	(20,617	18)	19,817	13
Barrack and Garrison Administration, etc. ...	1,493,255	(74,662	15)	68,807	10
Lodging Allowance	2,268,260	(113,413	0)	185,123	3
Medical Department	2,111,857	(105,592	17)	91,332	19
Travelling, Transport, and Freight Charges ...	3,446,000	(172,300	0)	166,850	0
Training Establishments	404,987	(20,249	17)	20,208	8
Maintenance of Fleet and Dockyards ...	28,057,074	(1,402,853	14)	1,321,694	6
Ordnance, Arms, and Fortification	10,318,608	(515,930	8)	463,922	18
Accountant-General's Department	873,290	(43,664	10)	36,730	13
Pilotage and Surveying	709,296	(35,464	16)	33,801	10
Miscellaneous Expenses	1,498,885	(74,944	5)	65,766	14
Administration of Kiau-Chau Protectorate ...	102,027	(5,101	7)	4,818	15
Total	112,802,035	(5,640,101	15)	5,263,037	15

SPECIAL ORDINARY ESTIMATES.

Shipbuilding Programme for 1906.

For the construction of the following ships :—

	Marks.	£	s.
The first-class battle-ship "Lothringen" (*M*), 4th and final Vote	2,350,000	= (117,500	0)
,, ,, ,, "Deutschland" (*N*), 4th and final Vote	2,350,000	(117,500	0)
,, ,, ,, "O," 3rd Vote	4,650,000	(232,500	0)
,, ,, ,, "Hannover" (*P*), 3rd Vote ...	4,650,000	(232,500	0)
,, ,, ,, "Q," 2nd Vote	6,050,000	(302,500	0)
,, ,, ,, "R," 2nd Vote	6,050,000	(302,500	0)
,, ,, ,, Ersatz "Bayern" 1st Vote ...	3,000,000	(150,000	0)
,, ,, ,, Ersatz "Sachsen" 1st Vote ...	3,000,000	(150,000	0)
Mine-ship A, 2nd and final Vote	1,000,000	(50,000	0)
The first-class armoured cruiser "C," 3rd Vote	4,270,000	(213,500	0)
,, ,, ,, "D," 2nd Vote	5,030,000	(251,000	0)
,, ,, ,, "E," 1st Vote	3,000,000	(150,000	0)

	Marks.	£	s.
The third-class cruiser "Leipzig" (*N*), 3rd and final Vote	1,090,000	(54,000	0)
" " " "Danzig" (Ersatz Alexandrine), 3rd and final Vote	1,090,000	(54,500	0)
" " " Ersatz "Meteor," 3rd and final Vote	1,090,000	(54,500	0)
" " " "O," 2nd Vote	2,435,000	(121,750	0)
" " " Ersatz "Wacht" 2nd Vote... ...	2,435,000	(121,750	0)
" " " Ersatz "Blitz," 2nd Vote	2,435,000	(121,750	0)
" " " Ersatz "Pfeil," 1st Vote	1,230,000	(61,500	0)
" " " Ersatz "Comet," 1st Vote	1,230,000	(61,500	0)
For the construction of a Tender for the Artillery School in Sonderburg	450,000	(22,500	0)
For the construction of a Mine-ship B, 1st Vote	1,000,000	(50,000	0)
" " Division of Torpedo-boats, 2nd and final Vote	2,440,000	(122,000	0)
" " Two Divisions of Torpedo-boats, 1st Vote	8,000,000	(400,000	0)
Fitting-up of a first-class battle-ship of the "Sachsen" class as a Torpedo school-ship	150,000	(7,500	0)
Improvements to the first-class armoured cruisers "Hertha" and "Victoria Louise," 1st Vote	500,000	(25,000	0)
Construction of and experiments with Submarines ...	2,500,000	(125,000	0)
Total	73,475,000	(3,673,700	0)
For the Gun and Torpedo Armaments of New Ships, and Mines	35,725,000	(1,786,250	0)
Miscellaneous Expenditure: Dockyards, etc.	7,064,650	(353,232	10)
	116,264,650	(5,813,232	10)
From which has to be deducted, credited in the Extraordinary Estimates	27,575,000	(1,378,750	0)
Leaving Total...	88,689,650	(4,434,482	10)

Summary.

	1906. Marks.	£	s.	1905. £	s.	Increase, 1906. £	s.
Ordinary Permanent Estimates	112,802,035	(5,640,101	15)	5,263,037	15	(+377,064	0)
Shipbuilding, Armament, etc.	88,689,650	(4,434,482	10)	4,171,422	10	(+263,060	0)
Extraordinary Expenditure...	51,965,000	(2,598,250	0)	2,346,450	0	(251,800	0)
Total	253,456,685	(12,672,834	5)	11,780,910	5	(+891,924	0)

The Personnel of the Fleet.—The following are the numbers of the officers of different ranks on the Active List of the Fleet:—1 Grand Admiral, 6 Admirals, 4 Vice-Admirals, 15 Rear-Admirals (a total of 26 Flag Officers), 71 Captains, 151 Frigate and Corvette Captains, 349 Captain-Lieutenants, 874 Lieutenants, 378 Midshipmen, and 175 Naval Cadets.

There are, further, 2 retired Rear-Admirals, 9 retired captains, 20 retired Frigate and Corvette Captains, and 5 retired Captain-Lieutenants employed on special duties, while 44 Captain-Lieutenants and 73 Lieutenants are employed in ordnance and torpedo duties in the various dockyard and coast stations.

The total number of commissioned officers of the military branch actively employed is thus 1,470, as against 1,370 last year, being an increase of 2 Rear-Admirals, 4 Captains, 3 Frigate- or Corvette-Captains, 50 Captain-Lieutenants, and 41 Lieutenants.

The Engineering Department consists of:—8 Chief Engineers or Senior Staff Engineers, 43 Staff Engineers, 85 Senior Engineers, and 131 Engineers, being an increase of 1 Chief Engineer or Senior Staff Engineer, 5 Staff Engineers, 7 Senior Engineers, and 13 Engineers over last year.

The Staff of the Marine battalions is as follows:—1 Inspector of Marine Infantry, 2 Battalion Commanders, 13 Captains, 12 First Lieutenants, and 22 lieutenants, being the same establishment as last year.

The Medical Department consists of:—1 Medical Director-General (with the rank of Rear-Admiral), 4 Inspector-Generals, 44 Fleet-Surgeons, 79 Staff Surgeons, 46 Surgeons, and 47 Assistant-Surgeons, being an increase of 5 Fleet-Surgeons, 3 Staff Surgeons, 2 Surgeons, and 3 Assistant-Surgeons over last year.

In the Accountant Department are 31 Staff Paymasters and 149 Senior Paymasters and Paymasters, being an increase of 3 Staff-Paymasters and 6 Paymasters over last year.

The Seamen's Divisions number:—111 Chief Warrant Officers, 183 Warrant Officers, and 16,175 Petty Officers and men, with 48 Boys' Instructors and 1,052 boys, a total of 17,569, showing an increase of 11 Chief Warrant Officers, 16 Warrant Officers, and 1,086 Petty Officers and men, the number of boys and their instructors remaining the same.

The Dockyard Divisions number:—313 Chief Warrant Officers, 625 Warrant Officers and 11,735 Petty Officers and men, of whom 833 Chief and Warrant Officers and 9,585 Petty Officers and men form the Engine-room *personnel* of the Fleet, which shows an increase of 49 Chief and Warrant Officers and 670 Petty Officers and men over last year, with a total increase in the divisions of 50 Chief and Warrant Officers and 754 Petty Officers and men.

The Torpedo Divisions number:—92 Chief Warrant Officers, 185 Warrant Officers, and 4,659 Petty Officers and men, of whom 52 Chief and Warrant Officers and 2,146 Petty Officers and men are of the seamen class, while 225 Chief and Warrant Officers and 2,513 Petty Officers and men are of the engineering branch. There is an increase in the divisions of 17 Chief and Warrant Officers, and 234 Petty Officers and men of the engineering branch, and of 4 Chief and Warrant Officers and 168 Petty Officers and men of the seamen branch, or a total increase in both branches of 21 Chief and Warrant Officers and 402 Petty Officers and men.

The Seamen-Artillery Division numbers:—12 Chief Warrant Officers, 24 Warrant Officers, and 2,899 Petty Officers and men, showing an increase of 1 Chief Warrant Officer, 1 Warrant Officer, and 149 Petty Officers and men over last year.

The Marine Infantry numbers:—191 Non-commissioned Officers and 1,038 men—a similar strength to last year.

The Sick Bay Staff consists of:—438 Petty Officers and men of various grades, being an increase of 98 over last year; and there are 330 ships' stewards, writers, and assistants.

The sum total of all ranks is 43,474, being an increase of 2,802 compared with 1905:—

Personnel.	Officers.	Non-commissioned Officers and Seamen.				Total all Ranks, 1906.	Increase compared with 1905.
		Warrant Officers.	Petty Officers.	Seamen.	Boys.		
Naval Officers ... ... 1,470 Pensioned Officers ... 41	1,511	—	—	—	—	1,511	102
Junior Executive Officers ...	—	—	378 M'shipmen	175 Cadets	—	553	25
Engineer Officers	269	—	—	—	—	269	26
Paymasters	180	—	—	—	—	180	—
Seamen, Boys, Dockyard and Torpedo Divisions ...	—	1,509	7,525	25,044	1,100	35,178	2,340
Seamen Artillery	—	36	336	2,563	—	2,936	151
Marine Infantry	50	—	191	1,033	—	1,274	—
Personnel of the Clothing Department	—	—	25	200	—	225	1
Medical Department	221	—	184	259	—	664	111
Artillery Administration	74	99	56	—	—	229	16
Torpedo *Personnel* (Technical and Administrative ...	46	107	46	—	—	199	11
Mining *Personnel* (Technical and Administrative)	19	29	44	—	—	92	7
Accountant Department	—	75	200	42	—	317	12
Surveying „	—	28	—	—	—	28	—
Total	2,370	1,883	8,985	29,316	1,100	43,654	2,802
		41,284					

—*Etat für die Verwaltung der Kaiserlichen Marine auf das Rechnungsjahr, 1906.*

MILITARY NOTES.

HOME.—The following are the principal appointments which have been made :—

Lieut.-Generals—Lieut.-General Sir A. Gaselee, G.C.I.E., K.C.B., I.A., is promoted to the rank of General.

Major-Generals—Major-General R. A. Montgomery, C.V.O., C.B., to command the Transvaal District. Major-General A. J. Nixon to command the Royal Artillery at Gibraltar. Major-General S. J. Nicholson, C.B., to be Colonel-Commandant Royal Artillery. Major-General W. L. Pemberton, C.B., to be Colonel-Commandant the King's Royal Rifle Corps.

Colonels—Colonel (temp. Brigadier-General) H. M. Lawson, C.B., A.D.C., from Director of Movements and Quartering, to be a Brigadier-General to command the 13th Infantry Brigade. Captain and Brevet Colonel G. F. Gorringe, C.M.G., D.S.O., from R.E., to be Director of Movements and Quartering at Headquarters. Colonel T. Capper, D.S.O., Commandant Indian Staff College, is granted the temporary rank of Brigadier-General, while holding that appointment. Colonel R. H. Mahon, to be Director-General of Ordnance in India, and is granted the temporary rank of Major-General whilst so employed. Lieut.-Colonel and Brevet Colonel G. A. Miles, C.B., from h.p., to be a Brigadier-General, to command

a Grouped Regimental District. Colonel F. H. Hall, C.B., from O.C. Royal Artillery at Bulford, to be a Brigadier-General in Charge of Administration. Colonel R. C. Maxwell, C.B., from h.p., to be a Brigadier-General in Charge of Administration.

Army Re-organisation.—The following is a summary of the scheme of the Secretary of State for War as laid before Parliament on the 12th July for the Re-organisation of the Army :—

REGULARS.

Infantry.—The first proposal was that the Army should be reduced by 20,000 Regulars. With the Army re-organised, the Army Council held that the Country should be able to mobilise in war a force contrasting with the old force as three army corps contrasted with two. This force would not be organised in army corps or in small divisions, but would consist of six big divisions of infantry, corresponding in organisation to the Army in India. With these six divisions would be four cavalry brigades and a full complement of artillery. The country should have an expeditionary force of 150,000 men; 50,000 with the colours, 70,000 Reservists, and 30,000 men trained on the Militia basis, and under an obligation to come out on mobilisation. The Defence Committee had come to the conclusion that the Army might be safely reduced by eight battalions serving abroad and two battalions at home. The reductions would be made gradually, and the officers and men be provided for by absorption. The ten battalions of Guards were to be reduced by two. The 3rd Scots Guards would be dealt with first, and then the 3rd Coldstream Guards. The Line battalions which it had been decided to do away with were battalions for which it had not been possible to obtain the necessary recruits. They were the 3rd and 4th Battalions of the Northumberland Fusiliers, the 3rd and 4th Battalions of the Royal Warwickshire Regiment, the 3rd and 4th Battalions of the Lancashire Fusiliers, and the 3rd and 4th Battalions of the Manchester Regiment. In future the terms of enlistment would be—for infantry of the Line seven years and five years; for the Guards, three and nine as now; for the cavalry, seven and five; for the field and horse artillery, six and six; and for the garrison artillery, eight and four. The result of this change would be that, whereas now we had 52 Line battalions in India, 32 in the Colonies, and 72 at home, we should in future have 52 in India, 25 in the Colonies, and 71 at home.

Artillery.—With regard to the artillery, the Secretary of State for War affirmed that the late Government had not supplied the men necessary for the mobilisation of the field artillery, so that they could not have mobilised more than 42 field artillery batteries out of 93. Owing to the reductions in coast defences, however, some 13,000 garrison Militiamen and Regulars were available for making good the deficiency to which he had referred, and they could serve with ammunition columns and form a reserve for the artillery. It was proposed to maintain our 93 batteries of field artillery, and 63 would be the artillery complement of our field force. The old 15-pounder field guns were to be handed over to the Volunteers. They could be converted into quick-firing guns. With the surplus batteries in reserve, the Militia would be trained. As a result of these changes the field artillery would be 50 per cent. more efficient and a saving of £300,000 a year would be effected. The horse artillery was not to be touched.

Auxiliary Forces.

Militia.—The Militia must have new functions assigned to it, and must engage to serve abroad in war time. It was to be territorialised more completely, and its connection with the Regular Army was to be closer than heretofore. The weak battalions of Militia were to be dealt with, and the force was to be consolidated. The Militia was to be the first line of Reserve behind the Regular Army.

Volunteers. — As to the Volunteers, their functions would be to defend naval fortresses, to repel possible raids, and to form a second Reserve for the Army in case of need. For these purposes the Volunteers were to be organised, and he intended that the duties assigned to them should have reference to the special needs of different localities. For the Volunteers there must be some kind of Home Rule in order to ensure efficiency. Associations were to be formed in counties, which would concern themselves with the affairs of the Auxiliary Forces. This subject was being considered by a committee presided over by Lord Esher. He stated briefly his intentions in regard to the Yeomanry, and then, dealing generally with the question of the expansion of our forces, he expressed the opinion that compulsion would not be of the slightest avail. He believed in stimulating local interest in the subject of defence. If their interest was aroused the people would render assistance readily, and he was confident that they could be trusted to undergo in sufficient numbers some preliminary training, so that, should the emergency arise, they might be rapidly brought up to a higher military standard.—*Précis* from *The Times.*

Memorandum on Army Reorganisation.—1. Since I made a statement on behalf of the Government on the 12th July there has been much discussion both in and out of Parliament upon the subject of Army reorganisation. It will probably be convenient that I should briefly restate the broad principles which underlie the propositions of the Government without repeating particulars of reductions already given in some detail.

2. The substance of these propositions is that increased economy and increased efficiency are no more in practice mutually exclusive conceptions than they are in logical theory. In order to see whether a reorganisation is possible which shall combine the two principles, a careful survey has been made of the Army as a whole, both of the Regular and of the Auxiliary Forces. The result has been to show that, in the case of the latter in particular, they have grown up haphazard, upon no principle, and with no definite purpose or function in a whole assigned to their constituent parts.

3. As regards the Regular Army, the survey has shown that it contains a large number of services which are more or less of a civilian nature, and which soldiers agree could be efficiently performed in war by civilians, who give only a part of their time to military training in peace, and yet are willing to take a definite engagement to serve oversea, if necessary, on mobilisation. The manning of the ammunition columns, certain transport, railway, supply, clerical, medical, and veterinary services, and much work done by artificers, *e.g.*, shoeing-smiths, wheelwrights, etc., are instances to which this principle can be applied.

4. The question, therefore, which arose on the survey was, whether it was not possible, while reducing the size of the standing Regular Army—forming as it does to-day an organisation almost entirely disconnected from the civilian population—to effect at once substantial economy, and at

the same time, with a part of the money saved, to increase the total number of the persons capable of rendering effective military service to the nation, by substituting, in many instances, what might be called an engagement on a Militia basis for an engagement to devote exclusive time to service with the Regular Army. By giving effect to this principle it is possible not only that the number of Regulars available for fighting purposes should be augmented, and the organisation of an expeditionary force be rendered more efficient, but that substantial money savings should also become practicable.

5. In some respects the political conditions of the time lend themselves peculiarly to reconstruction on the lines indicated. No doubt, if the only military problem was how to send reinforcements to the troops in India, the policy of having a very small force at home organised for expeditionary purposes, and a large unorganised mass of troops, out of which reinforcements could be evolved somewhat after the fashion pursued in the war in South Africa, would at least be deserving of consideration, even although open to grave objection from the want of cohesion of principle in the organisation. But the change in the political circumstances of the day has made it possible, for the present, to divert exclusive attention from North-West Frontier of India, and to consider other possible contingencies.

6. What seems to be a rational principle—and it is the principle of the Government plan—is to ascertain by way of commencement what number of Regular troops it is necessary to retain at home in peace for the purpose of finding drafts for the forces of the Crown overseas, and then to organise out of them—well within a margin—as complete an expeditionary force as possible. A definite number of Regular troops being, for the reason above indicated, necessarily maintained at home, to organise them in the form of an expeditionary force is to obviate waste both of money and of men, for this single force will thus serve two purposes.

7. For reasons upon which I will not enter at present, this object will, in the opinion of the Government and of its military advisers, be most surely attained by adhering to the so-called Cardwell system. Drafts for the troops overseas may be found either through the medium of depôts or of training battalions; whichever mode is adopted, the same amount of drafts is necessary. The Cardwell system makes the training battalion serve two purposes—it provides drafts in peace, and the same battalion can, on mobilisation, by means of Reservists, be transformed into a first-class fighting unit. Where world-wide duties have to be performed, battalions mobilised in this fashion appear to the great majority of the expert military advisers of the Government to be greatly preferable to the battalions of an independent short-service army, composed largely of inexperienced and partially-trained Reservists, who must necessarily be quite inferior to seasoned men who have already gone through a substantial period of service abroad. It is on this very principle that the expeditionary force itself is moulded as a whole in these proposals, to fulfil the double function of draft finding in time of peace and of readiness for war on mobilisation. On mobilisation the necessity for finding drafts for foreign garrisons of course ceases automatically, as men are not then sent home to go to the Reserve.

8. Combining the two principles—first, that the size of the expeditionary force is the outcome of what it is necessary to keep at home in time of peace to supply drafts to the overseas forces; and, secondly, that for those who are not destined immediately to occupy the first combatant

line, and for others whose services are mainly of a civilian character, training on a Militia basis is sufficient — a definite conception of the organisation of the Army can be framed.

9. The General Staff have taken the forces which we are compelled to maintain at home in peace in order to provide drafts for our forces abroad, and, applying the principles above laid down, have worked out the proper organisation of this mass of troops for war. As a result we should, if the Government's proposals receive effect, be in a position to readily mobilise for service oversea a force consisting of four Cavalry brigades and six divisions (each of three brigades), with the necessary troops for lines of communication, or, roughly, 150,000 officers and men. Of these about 50,000 will be Regulars serving with the Colours; about 70,000 will be Reservists, and about 30,000 men employed and trained on a militia basis.

An army so organised would be, in point of numbers available for taking the field overseas, nearly 50 per cent. stronger than any expeditionary force which we have hitherto attempted to organise. It is possible to organise such a force with a smaller peace establishment of Regular troops and with reduced expenditure, but only upon the footing that the existing Militia and any other troops we raise on a militia basis can be diverted (from functions now superseded) to the aid and support of the expeditionary force, and, with a view to this, can be got to take engagement for service oversea in time of war. This is how it is possible to make reductions in the Regular or Standing Army, and yet to increase the strength and efficiency of the National Army as a whole.

10. The new arrangements proposed by the Government are, of course, so far, only *in fieri*, but negotiations are now proceeding with representatives of the various elements in the Auxiliary Forces which are required to complete the organisation. In the case of the Artillery there is at present such a deficit of both officers and men that, to mobilise 42 field batteries with their ammunition columns, we should be obliged practically to destroy the remaining 51 batteries in the United Kingdom. If the existing system of 3 years' Colour service, with 9 years in the Reserve, were retained for the Artillery as has been suggested, a large reserve it is true would have been produced by the year 1914; but there are inherent in this system two dangers against which no provision has been made, the one is that the 3 years' men will not re-engage in sufficient numbers to provide the drafts required for India and the Colonies, the second is that a part, at all events, of a reserve consisting of men who remain for 9 years without any provision being made for their training, and who have never had any actual experience with the latest type of gun, may not prove as efficient as could be desired for the purposes of war. Moreover, such a system makes no provision whatever for officers, of whom the Artillery is as short to-day as it is of men. It is proposed, therefore, to form the Militia Garrison Artillery officers and men, as field gunners, into a reserve section of the Royal Regiment of Artillery, which will then be sufficiently large to mobilise, in conformity with modern standards, not only all the Field Artillery cadres of the expeditionary force, including 63 Field batteries, but certain reserve batteries as well.

11. It is not the desire of His Majesty's Government to break up or destroy, more than is avoidable, the existing organisation of the Auxiliary Forces. For instance, the new Militia Field Artillerymen will, although forming an integral part of the Royal Regiment, retain their territorial connection and be trained in their units and with their officers, senior and junior, as at present.

Similarly, the Militia Infantry battalions, although drawn closer to the Regular battalions of the Territorial Regiments of which they form part, will still be trained as units. What is hoped for is that it will be possible to send them abroad in their units, to render such services as may be required of them. The leading military authorities are agreed, however, that it would be wrong to give a pledge that they shall never be asked to go abroad otherwise than in battalions. National necessities may arise, paramount to every special interest, and it is, therefore, right that there should be reserved, at least for possible exercise, a power to make the same call upon these battalions as is often made on Regular battalions, that is to say, to send out companies with company officers to join another battalion of their Territorial Regiment. I need hardly, however, add the observation that the last thing the Government desires is to revert to the old system under which Militia battalions were ruined by being bled white of their best officers and men, before being called on, as units, to take the field. To obviate the necessity for this, and to make provision for the maintenance of the Regular battalions, a depôt battalion will, on mobilisation, be formed for each Territorial Regiment, from which drafts to replace the waste of war may be furnished.

12. There is good reason to believe that the Imperial Yeomanry are prepared to adopt a new and more important part in the national military organisation, and to accept, even though the result may be that their numbers may somewhat diminish, liability for service overseas in time of war. They will train, if this proposition is carried out, in their own units and with their own officers, with a view to assuming functions in the expeditionary force, which, in the opinion of the General Staff, may well be entrusted to corps which will become a second line of Cavalry.

13. The question of providing officers and an efficient reserve of officers is of great importance and urgency. There is at present an alarming deficiency in the number of officers required on mobilisation, and no serious attempt has hitherto been made to deal with this. It seems clear that no single avenue is sufficient along which to proceed in search of additional officers. For some time past the whole matter has been under close consideration, and it is hoped that it will be practicable shortly to make propositions which may lead not only to the establishment of a reserve of officers for the Army generally, but to the filling up of the numerous vacancies in the officers' ranks of many branches of the Service, notably of the Militia.

14. So far the organisation of an expeditionary force for service overseas is all that has been under consideration. To mobilise such a force, and to make provision to meet the wastage of war during the earlier stages of a serious campaign, practically the whole of the Regular troops in the United Kingdom and a large portion of the Militia and Yeomanry as well would be required. The amount of support and expansion we could hope to get from these sources would, therefore, be strictly limited in quantity. But suppose we were engaged in a war of great severity and of prolonged existence, what provision is made for further support, and for expansion, if necessary? The answer under present circumstances is that provision is deficient, so that it would be necessary, should events like those of the South African war recur, to improvise both support and expansion, a process always highly unsatisfactory.

15. What the Government now aims at doing is to bring the Army nearer to the people in the localities, and get over this difficulty, first, by giving full effect to the scheme of territorialisation, initiated by Mr. Gladstone and Mr. Cardwell; and, secondly, by encouraging the people to

adapt the Volunteer Forces, which they have raised somewhat haphazard, for the definite functions of support and expansion. Support should take the form of an organisation which will enable the expeditionary force to leave these shores, certain that the naval fortresses and the points on the coast line which require garrisons would be adequately manned from Volunteer sources, and, further, that sufficient forces drawn from the Volunteers would be available to repel raids. But to enable them to fulfil such functions, the Volunteers must be more completely and more scientifically organised for war than they are at present, and the General Staff, keeping the objects of support and expansion in view, are now preparing a scheme for giving the Volunteer Force a real war organisation. The effect of an organisation of this nature, when fully developed, should go far towards meeting present requirements, because it is certain that, if the mind of the nation is concentrated on the defence of its own interests, it will, if it is made possible for it by adequate preparation to do so, pour out in case of necessity very substantial numbers to the expansion as well as the support of the expeditionary army. This appears to be a truer method of expansion, not only in these islands, but throughout the Empire as a whole, than either an enormous standing army, or an attempt at imposing legal obligation on men to go abroad. It must never be forgotten that the real purpose for which we might require men, mainly, defence of our frontiers across the seas, is wholly different from the home defence necessities of continental nations.

16. Experience has shown that centralised forms of administration are not suitable for the purposes of citizen forces raised on a voluntary basis. Conditions which suit one district and one corps have a most detrimental effect elsewhere. Moreover, centralisation tends to stifle local effort. For a citizen organisation local assistance is necessary, not to supersede those duties of command and training which, as in the Regular Army, must always remain in the hands of Brigade and Divisional Commanders, and ultimately of the General Officer Commanding-in-Chief, but for the purpose of obtaining not only the men but the facilities for rifle practice and manœuvring which can only be got readily if, in each county, those who control possible rifle ranges and manœuvring grounds are interested in an organisation in which they take pride as being in a large measure their own. Accordingly, the Government is considering the practicability of handing over certain business relating to territorial forces to County Associations, so formed as to be really representative of local feeling, and of making them responsible for the civil administration of the Volunteer forces locally raised and maintained.

17. Besides managing the affairs of the local Volunteer forces, such Associations might serve a most useful purpose in fostering rifle clubs, cadet corps, and other semi-military bodies, which would be affiliated to the local forces. It is to be hoped, too, that they will be in a position to assist recruiting for the Regular Army, that they will help those who have served their country abroad to obtain employment when they leave the Colours, and that they will generally look after Army interests in their own districts.

Briefly, the Associations should do much to develop local interest in the military forces of the Crown as a whole, and, through them, adequate machinery should, in time, be produced for dealing systematically with the patriotic efforts of the nation to help the Army in time of war. The want of any such machinery was keenly felt in the earlier stages of the South African campaign.

18. To sum up, the Government's proposal is that effort shall, in future, be mainly concentrated on the production of an expeditionary force immediately available for use overseas in war, with a territorial organisation behind, capable of supporting and expanding it. The expeditionary force and its immediate supports will be administered directly by the military authorities, the territorial part of the National Army by County Associations. The command and training of all forces will be in the hands of the General Officers Commanding-in-Chief. The schemes which will form the basis of their organisation in peace, and of their allotment in war, will be prepared by the General Staff.

R. B. HALDANE.

30*th July*, 1906.

APPENDIX.

Approximate numbers required for a force consisting of four Cavalry Brigades and six Divisions (of three brigades each), and to make good war wastage for 6 months.

1. The numbers, by arms, required for a force of four Cavalry Brigades and six Divisions, are as follows :—

—	Officers.	Other Ranks.
General Officers, Staff and Special Appointments	265	—
Cavalry	490	11,132
Artillery	693	28,752
Engineers	268	7,287
Infantry	2,236	77,183
Army Service Corps	344	19,093
Royal Army Medical Corps	1,061	8,408
Army Veterinary Corps	117	632
Army Ordnance Corps	72	1,587
Total	5,546	154,074

2. The following are the approximate numbers of the above who will be on a non-regular basis, *i.e.*, who will not require a continuous military training throughout the year:—

—	All Ranks.
Cavalry	3,240[1]
Artillery	10,337
Engineers	2,425
Infantry	—
Army Service Corps	10,775
Royal Army Medical Corps	3,098
Army Veterinary Corps	541
Army Ordnance Corps	441
Total	30,857

3. There will not be sufficient Regulars and their Reservists to make good the war wastage, so it will be necessary to have recourse to officers and men on a non-regular basis to complete the numbers required. It is

[1] Six Yeomanry regiments to act as divisional Cavalry. The employment of more Yeomanry with the expeditionary force is under consideration.

estimated that the total numbers required to make good the war wastage for 6 months will be approximately as follows :—

——	All Ranks.
General Officers, Staff and Special Appointments ...	40
Cavalry	4,581
Artillery	10,610
Engineers	1,673
Infantry	34,740
Army Service Corps	3,060
Royal Army Medical Corps	1,315
Army Veterinary Corps	84
Army Ordnance Corps	182
Total	56,285

NOTE 1.—The numbers shown in 2 and 3 represent requirements only. The numbers to be maintained in peace to meet these requirements would be considerably greater.

NOTE 2.—The numbers shown in the second table as on a non-regular basis consist partly of men trained on a Yeomanry or Militia basis, partly of Reservists paid retaining fees but not trained, and partly of civilians to be specially engaged on mobilisation.

SOUTH AFRICA. — *The Fighting Tribes of Southern Africa.*— The act which has been the ultimate cause of the present rebellion of the negroes is known as the "Glen Grey Act" of Cape Colony, and its real author was that master mind of South Africa, the late Cecil Rhodes. This law, which to-day exists also in Natal, Orange River Colony, and the Transvaal, provides that every native must pay a yearly head tax, and in default be imprisoned for a certain period, or work off the tax and attendant fine in the employ of some white man. The last clause explains the true significance of the law and the reason for its enactment—the labour problem. While the earlier differences between the natives and the settlers were due to territorial and governmental disputes, for the last twenty years these questions have fallen into the background before the problem of native labor. The year 1886 saw the beginning of the great mining industries with the discovery of gold on the Witwatersrand—industries which, of necessity, require the employment of many thousands of labourers. Because of the small number of the whites, and for climatic reasons, the labourers were to be found only in the ranks of the native blacks. Now, the native is constitutionally and ethnologically averse to protracted labour. He will work in fits and starts at that period of the year which is climatically unsuited to his tentative agricultural pursuits, or his care-free loafing — in other words, the winter. Even the head-tax scheme, however, failed substantially to improve the labour market, and as the subsequent importation of coolie workers into South Africa has not been very successful, the labour problem is still no nearer solution.

One thing is certain, the natives resist the imposition of the tax in every possible manner—by trickery, by evasion, and finally by force. The present uprising under the chief Bambata is directly due to the head-tax; it followed the killing of two English collectors by Zulus, with the subsequent execution by the government of twelve natives implicated in the murders. Whether there is sufficient cohesion between the various tribes

to make possible a general rebellion is problematical, but the revolt is unquestionably spreading, and already one British force has suffered a reverse. The blacks of South Africa, the Kaffirs, must be considered among the sturdiest of savage fighters; especially is this true of such tribes as the Zulus and Matebele. Whether their fighting ability is still such as seriously to menace the white man's superiority, even temporarily, remains to be seen.

The South African native, exclusive of the Hottentot, or Bushman, must be counted among the highest of the blacks. Certain of his characteristics are admirable; he is brave to a fault, and a most consistent enemy, while capable of fidelity and gratitude. Where contact with the white race has not corrupted him, he is fairly honest, though, it must be admitted, lazy and improvident. By nature he is a savage, and as such he wages savage war, often with a brutality and bloodthirstiness which seems incomprehensible to us—who prefer to kill at half a mile with a leaden pellet, rather than with a three-foot spear blade at half a yard. Dispossessed of his lands by force, ever driven backward by British, Boer, or Afrikander, the prey of a civilisation which he can neither understand nor acquire, it is little wonder that the black has at times resisted primitively, fiercely, and desperately. His is the story of the Indian, of the Polynesian, of the savage the world over, a pitiful story that is as unchangeable as history itself, and that can have but one ending, the absolute supremacy of the white race. Whether or not this means the destruction, the absorption, or the independence of the native is a question for future generations to solve.

The Kaffirs are ethnologically cattle breeders, though their agriculture includes the raising of various vegetables and fruits. They eat meat only when fighting, and the cattle are used largely as a medium of exchange. Their houses are cone-shaped and are grouped in kraals. The male is essentially a warrior; the woman, the farmer and the general drudge. The Kaffir's life-long feuds with his enemies, native and white, have developed in him mental and physical qualities far above those of the true negro. He is tall, slim, and muscular and capable of great physical exertion. His native weapons are the knob-kerry, or striking and throwing club, and assegais, or spears for hurling or thrusting; he protects himself with a great decorated shield of toughened ox-hide. The original religious beliefs of the Kaffirs are on a much higher plane than those of most other African tribes; the type of religion was an advanced grade of ancestor worship. The government of the tribes is an absolute chieftaincy, with an hereditary sovereign or *Inkose*.

The great Kaffir tribes, which doubtless drove out the original Hottentot-Bushmen, belong to the Bantu family, inhabiting the eastern and coastal regions of the south-east part of the continent. The name Kaffir is generic, and applies to almost all the blacks inhabiting South Africa, so called, and includes to-day the Zulus, Matabeles, Basutos, Bechuanas, Swazies, Pondoes, and Fingoes, with several lesser tribes. At the period when the early settler began to penetrate from the coast, the Kaffirs included over a thousand distinct tribes, but continued wars with one another and with the whites have so materially reduced these tribes by extermination and consolidation, that but a handful remains to-day. The first Kaffir war with the settlers began about 1785, arising from a boundary dispute between the Zulus and the Dutch. Since that time the clashes with the white settlers have been numerous, sometimes mere spontaneous and scattered uprisings, and at other times bloody and protracted wars, such as those with the Zulus and Matabele. Nor have the white men

been always undefeated, as evidenced by the terrible battle of Isandula, where a British column was overwhelmed and destroyed by 20,000 of the splendidly-trained warriors of Cetywayo, the greatest of the Zulu kings. The Zulus are easily the best of the Kaffir races, and have always offered the sturdiest resistance to the whites. Their intelligence is well above the average; they are fairly moral, and in the native state temperate in all things. The desperate courage and fighting ability of the Zulus is historic throughout South Africa.

Notwithstanding the reduction in numbers which the Kaffirs have suffered during the last generations, they are still numerically strong enough seriously to menace the white race. It is estimated that the natives of Cape Colony number about 1,350,000; of Basutoland, 300,000; Natal, 400,000; Zululand, 150,000; Amatongaland, 25,000; Bechuanaland, 50,000; Orange River Colony, 125,000; Transvaal and Swaziland, 700,000; Rhodesia, 1,500,000; and Nyassaland and neighbouring territories, 1,100,000; while the total whites in the colonies number but 1,250,000. The safety of the settlers doubtless lies therein that the Kaffirs are disintegrated and lack tribal cohesion. Were it not for this, a concentrated uprising might sweep the entire white population into the sea, necessitating the final crushing of the blacks by superior weight and armament, and with the subsequent recommencement of the entire work of colonisation. It is to be hoped that the present sporadic uprising will be suppressed at once, either by overwhelming force, or, preferably, by conciliatory measures; for a savage native war, aside from the horrible barbarities which usually are incident to it, would seriously menace the present increasing prosperity and development of the South African colonies.—*Scientific American.*

Russia.—*The late General Dragomirov.*—As the late General Dragomirov was an officer of a European reputation, and the greatest Russian authority on military matters of his day, the following short sketch of his life, taken from the *Voiennyi Sbórnik*, may be of interest.

"Dragomirov is dead and with him has passed to the grave the instructor of our Army." Such is the sentence in which one of his pupils in an obituary notice characterises in brief the distinguishing mark of the late General. "He was known not only in Russia but throughout the civilised world, and that not only to military men but to laymen. What caused him to be so, and how far his life and activity justified such a reputation are questions which it is the purpose of this notice to answer, or at least to point out where the answer should be sought, dwelling on the most important facts and emphasising them."

Mikhail Ivanovich Dragomirov came of a West Russian family originally known as Dragomiretski, and one of those that defended the national cause in Red Russia (now called Galicia) against the Poles and Catholics. In 1734 their yoke forced our hero's great grandfather, Anton Dragomiretski out of the Polish dominions and to take up his abode with his father-in-law Motskevich, where his son Ivan was brought up on losing his father, and in 1786, on obtaining a commission as captain, was entered in the Genealogical Book of the Novgorod Lieutenancy under the name of Dragomiretski-Motskevich, which two years later he changed by permission to Dragomirov. Our hero's father was a retired major, and inherited from his wife's mother a farm and some land, about 200 *desiatines* in the Government of Cheringov.

Born in November, 1830, Mikhail received his training in the Dvorianski Regiment where "for his success in learning and his conduct it was decided to record him as most distinguished, and his name was written

on a marble tablet." In May, 1849, he was promoted from sergeant-major ("Feldwebel") to Ensign in the Semyenov Regiment of Guards, and in that year he took part in the march of the Corps to the Western frontier "on occasion of the war against the Hungarians."

In 1852 he became sub-lieutenant, and in 1854 lieutenant, and in that year entered the Imperial Military Academy "for training in higher military acquirements." Here again he was first and on leaving, at the end of 1856, received a gold medal, and for "special progress in knowledge" was promoted to Staff-captain. (It appears no one has had the medal since, and only one, in 1852, had it before.) He was now attached to the staff of the Corps, and in 1858 confirmed as captain in it. He began his literary career in '57 with an article on Landings in ancient and modern times in the "Vorm Journal." Early in the following year, two officers, each from the scientific branches of the Service, were selected to go abroad "for the study of military science and military organisation," and amongst them was Dragomirov, already a candidate for a professorship, and tactics were to be his special province. He went first to Paris, and while waiting for leave to inspect their Institutions, studied the Regulations. Soon he was attending lectures at the Staff College, and the Vincennes School of Musketry, at the same time inspecting the School of Gymnastics and the barracks of various arms. In May he sent in a Report on the Vincennes School to the Head of the Academy, which later he amplified and added to.

He found that "great stress was laid on practical exercises" and "theory played almost a secondary part": that the pupils were "burdened almost beyond their strength" and that officers who had not finished their work in time were deprived of leave on Sundays. However, "the general system of training deserved notice for its fulness, its definiteness, and strict adaptation to the main purpose of the Institution." The training in the regimental schools was sufficiently varied and comprehensive; the 'tableaux de service journaliers' could be to some extent modified by commanders of units, subject to the Chiefs of Districts, and on the whole were desirable as "putting a stop to the one-sidedness of the usual training due to the idiosyncracy of individual commanders, thus destroying in the soldier that amount of independence without which he could never be self-reliant." Lastly, the time given to each branch could be modified, but not the branches of instruction to be taught.

He writes very modestly at this time "I neither think myself able enough nor am I ambitious enough to look for high advancement, and consider myself lucky if by my labours I can profit the Academy, to which I owe a sacred debt of gratitude which would appeal to me still more, but for the obligation to give it four years' service. This time, spent on special duty is a most suitable opportunity for supplying the defects in general education which indirectly affect the course." One of these was a poor knowledge of German, "so essential to the study of the Art of War." But for the present he had to pass along the Eastern frontier of France and from thence to Algeria. Still more was he concerned with the inspection of various camps, the English at Aldershot, the Belgian at Beverloo, and the French in the neighbourhood of Chalons. His account of them and the training there were exhaustive and full of interest. He also visited various hospitals in England, France, and Belgium, on which and the care of the sick in general he reported to headquarters.

He was to remain abroad some time longer, Alexander II. having given him permission to watch the war between France and Austria, and to attach himself during operations to the Sardinian headquarters. In

July of this year ('59) he sent to the Head of the Academy an account of the battle of Palestro and the flank march of the French, which was crowned with such brilliant and well-merited success." Of his deductions we may cite the following—"Here is one instance more in addition to so many others, in support of that profound truth which Jomini propounded, simple as it may seem, that the first and most essential element of victory is a sincere and resolute desire to fight." He supplied further data on the campaign, and ere long published "The Battle of Solferino" and "A General View of the Italian Campaign of 1859"; doubtless this practical experience of war, even though only as a spectator, was a most admirable supplement to his observations in France and other countries.

He returned in the autumn and was at once called on to take part in putting on a proper footing the teaching of Tactics in the Academy, which sadly lacked qualified teachers of the subject. Lebedier had been succeeded, much for the better, by Mezentsied who had so many hearers and was like others so severely criticised, that he welcomed the two young assistants sent him, Leer and Dragomirov. Of them, the historian of the Academy writes: "They are too well known for me to dwell on their works, suffice it to say, that from the end of the fifties all our officers were taught under their direct influence. Luckily they were not antagonistic but worked in entire harmony. Together they drew up the whole course of Tactics for the Military Educational Establishments, and the programme for the Academy, but Dragomirov gave himself to the training and educating of troops from the individual soldier up, *i.e.*, what used to be called "Lower Tactics," while Leer was more concerned with "Higher Tactics, merging in Strategy." The guiding principle of their courses was that "the theory of the Art of War should have for its aim the examination of the qualities of military elements, and not the laying down of rules for operations." About this time appeared various works of his on the subject, the best known being "Notes on Tactics for Military Colleges" (1867). He also between '61 and '66 taught Tactics and Military History to the Tsareviches Nikolai and Alexander and the Grand Duke Vladimir. He was promoted Colonel in April, 1864, and made Chief of the Staff of the 2nd Guard Cavalry Division.

During the Austro-Prussian War of 1866 he was Military Attaché to the Prussian Army, afterwards publishing "Sketches of the War of '66," still useful for its comments on the preparation of the respective Armies for war and solution of various military problems. In August, 1868, he was promoted Major-General "for distinguished service," and next year appointed Chief of the Staff in the Kiev District. He had "so interested his pupils in their work that he was a loss to the Academy" while its Head, General Leontiev, expressed the assurance that "in his new sphere he would show the close connection between theory and practical proficiency as a Staff Officer." He received in this new capacity the Order of St. Anne, of the 1st class, in 1872 was attached to his Majesty's suite, and in the next year given the command of the XIVth Infantry Division. He received between 1871 and 1875 yearly the thanks of the Sovereign for his management of the Staff rides. He was very highly thought of in his new capacity, as was his "Essay in the Preparation of a Unit for Battle" ('70-'71).

He was now to show what he could do in war, for to him was entrusted the main crossing of the Danube at Jimnitsa, his own Division, the 4th Rifle Brigade, two sotnias of Voltigeurs, two mountain batteries, seven sotnias of Cossack cavalry, the Pontoon train and part of the Guard Equipage (sailors) being under him. General Radetski, Chief of the VIIIth

Corps, was present, but left everything to him. His calculations were well made and well carried out, though his personal presence alone saved the leading portion of the troops from disaster, till further force came up, when a timely advance on the Sistova Heights and the town of that name, resulted in the hasty retreat of the Turks. The action was marked by the display of initiative throughout down to the youngest leaders, such as he had set himself to inculcate. Like Snoreov he always insisted that "every soldier should understand his manœuvre" and not look behind him for some one to give him leave, but act at his own risk. At this time the Russian Army had only too much of seniors dragging juniors through, and the almost total paralysis of personal initiative. He himself was one of the few who were not interfered with because he was trusted and trusted to himself and God, and was guided by that common sense which is often so much to seek. The crossing might in spite of appearances, have been difficult if Dragomirov had thought too long about it and lost time in elaborate plans. His subordinates had to "think" and "exercise judgment," as Peter the Great said, as well as he. That was the pledge of success.

A French writer, "Tacticien," says "Le passage du Danube a été effectué avec une adresse et un talent merveilleux." In any case it is a highly instructive example.

He then took part in the advance of the VIIIth Corps on Tyrnovo in the track of General Gourka's Advanced Guard, and in the operations of General Radetski's force, facing southwards, up to the August battles at Shipka inclusive. On the 23rd of that month while mounting the Pass, he was wounded in the right knee by a bullet that passed through it and sent back to Russia to recover. He was thus prevented from showing to the end what he was capable of, but he had sufficient opportunities to confirm the reputation he already enjoyed. For distinguished conduct in the defence of the Shipka Pass he was promoted to Lieutenant-General in September, but his command of the Division was practically over.

In April '78 he was appointed Head of the Nikolaev Staff College, later made A.D.C. to the Tsar, and attached as Honorary Colonel to the 53rd Volynia Regiment, the first of his late Division, long afterwards known as "Dragomirovs." The first of these coincided with the recognition, on the experience of the lately conducted war, that the General Staff has done excellent work, and the College or Academy's labours borne fruit as declared in an Order by the Sovereign. There was a general call for an increase in the number of officers it turned out, so as not only to fill gaps but leave a certain surplus. With the aid of the Committee he took measures to do this without lowering the standard. He gradually became recognised as an authority both on military matters and other questions of education, and not only highly placed officers but learned Societies were eager to learn his opinion, where it was not offered. He had a rare and one might almost say killing logic, exceptional power of analysis and of generalisation, and the startling clearness of his judgments and conclusions gave irresistible force to his speakings and writings. During this period, in 1879, appeared his "Manual of Tactics," much criticised even then, but the principal ideas of which have now been definitely formulated, and thus become known to all soldiers. As regards the training and moulding of troops, it is claimed for him that he was "the pupil and successor of Suvorov, his best commentator, and at the same time the most talented exponent of his ideas to the world." Let the individual soldier and the smaller unit be duly cared for and the higher unit, the regiment division or corps will of necessity be as good.

The best part of his work is the first, dealing with the quality of troops rather than their handling. He denied the existence of "a science of war" yet was the first to define it in a way that was to become generally acknowledged and final.

Like Napoleon he laid great stress on the moral element, though not denying the importance of material conditions. He insisted that troops should receive "bayonet training," *i.e.*, "should be ready to grapple with the enemy breast to breast after firing at them point-blank." This of course evoked much criticism, and he was alleged to have denied the value of fire, which indeed he did regard as mainly preparing the way for the bayonet. In this respect he doubtless, it is admitted, went too far. He continued to set forth these views in articles extending from the seventies to 1895, when a final collection was published, the "Voiennyi Sbornik" and the "Razoiedchik" ('Scout') being the channels. He was perhaps best known outside his own country in France, and of the many works of his that were translated the majority were into French.

In August, 1839, he was appointed to command the Kiev District, in 1891 promoted General, and in January, 1898, made Governor-General of Kiev, Podolok and Volynia, retaining the command of the troops, and in 1903 Member of the Imperial Council, not relinquishing his military duties. He received all the Military Orders including that of St. Andrew, and the thanks of the Sovereign ten times, the three last in 1902, for "his good dispositions during the manœuvres near Kurck, the smartness, discipline and good condition of the troops, and the prompt carrying out of the mobilisation," as also their excellent appearance at the final review. He also was given the "Decoration for meritorious Service" during forty and later fifty years, with in the latter case a snuff-box with his Majesty's portrait in addition to many money-grants and rewards. Of foreign Orders, the Grand Cross of the Legion of Honour 1st class, 1896), the Palm Decoration of the Academy (1889), the "Medaille Militaire" (1900) and the Italian Order of the Iron Crown (1896) were the most important, the Bokharan of the Golden Star, set in precious stones (1893) and the "Iskender Salis" of 1898, the most curious. Various Cossack bodies, the Kuban, the Don and Terek, gave him honorary posts, the latter of Inspector of the Alexandrov "Stamtsa" ("settlement") School. He attended the French manœuvres in 1883, and was sent to inspect and carry out trials of the submarine defences of the Black Sea ports in 1887. He went on a Special Mission to Bulgaria in 1902, the 25th anniversary of its Liberation by the war. Various as were his employments and offices, he never swerved from his *rôle* of military teacher to the end of his life; even his writings were subservient to the same chosen calling. He still taught, when he left the Academy, the troops and the military reading public, in the end mainly the latter, but also indirectly, the former. His "General Orders" to the troops were read throughout the Army and even outside Russia. Not a few of them were talked over at the Academy and in private circles, and gave rise to the discussion of various questions in the Press. After he was heard mainly through his articles in the *Razoiedchik*. "Our Trifles," as they were called, were eagerly looked for and devoured; they were of the nature of talks with his readers, and were not always strictly military. There was, for instance, a well-known criticism of Tolstoy's "War and Peace," in which he examined the historical and military views of the author, and pointed out their want of consistence. He compared him to a chemist, who has analysed water, but cannot reconstitute it, so proceeds to declare there is no such things in Nature but "only oxygen and hydrogen—gases totally alien in their

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SKETCH OF GROUND
FOR
BALL FIRING MANŒUVRES
STRENGTH 1 DOUBLE COYS.

SCALE 8 inches to 1 Mile.

V. I. Roughly 1000 feet.

properties, and having nothing in common." It is a necessary adjunct and companion to the book, and a good antidote to the doctrines so freely preached in Russia, totally adverse to the soldier's calling, and the practice of war, which it is sought to discredit in the eyes of the masses. While a soldier to the backbone, he could fully enter into lay pursuits and judge of them, and was so far master of the methods of science as to be able to bring them profitably to bear on military matters.

To conclude, the pupil claims for his master that knowledge lost in him one of its most talented representatives, Russia, one of its most distinguished men, both in military and political circles, the Russian Army and the officers of the General Staff their Mentor, but his name will always belong to the history of the progress of Russian military thought. He will live for ever at the Nicolaied Academy through the hall named after him there, and with the Academy the whole Russian Army does reverence at the tomb of this, our military writer and thinker of the first rank."

CORRESPONDENCE.

BALL MANŒUVRES IN PEACE TIME.[1]

Opposing Forces Coming into Action with Ball.

To the Editor of the Journal of the Royal United Service Institution.

Sir,—Some years ago, after a Meerut field-day, commanding officers and staff were collected together to hear the "pow-wow" on the day's proceedings. There was no great feeling of elation on either side, for it was early in the drill season, and the manœuvring had been poor. After a few remarks, the general turned to a very senior colonel—a well-known gunner—and asked him what he thought of the day's work. "I thought it *rot*, Sir," said the colonel. "Dear me," replied the general, much taken aback. "But tell me, can you suggest any remedy to improve matters?" "Yes, Sir," was the answer. "I have a proposal to offer, and that is, to give *one* round of ball ammunition to one of the sides next time." Ignoring the astonished faces of the staff, the colonel then proceeded to explain how the issue was to be kept a dead secret, and how the troops were not to be told to which force the round had been given. He confidently asserted that all units and individuals would certainly then act as if in the field against a well-armed enemy. Failing this, he did not expect much success from peace manœuvres, and he naïvely added that in all probability no one would be hit by this solitary projectile!

The colonel was a good deal ahead of his time; but it is unlikely that the proposal will be sanctioned at present. The ordinary *field-firing* allows of little tactical instruction, and even when carried out as realistically as is now the case on Salisbury Plain, it is not very interesting to the rank and file. The truth is, that the British soldier requires some kind of opposition or competition to arouse his keenness. It is a national characteristic. We want to get the best results, and to achieve

[1] This communication was sent to us some months ago, but want of space has prevented its earlier publication.—Ed.

this we should humour such little foibles, and make them strong factors in the pathway of efficiency. The use of live ammunition often leads to so much "spoon feeding" and "dry nursing" that the value of a field-firing manœuvre is reduced to a minimum. Even in India it is often impossible to get over the difficulty of ground; but in undulating country as well as in mountainous, both at home and abroad, I feel sure that exercises on the following lines could be safely carried out, especially if, to start with, small units only were employed. We have had many similar parades with a battalion at Almora, India, where, I must own, we have exceptional ground, and until lately have been able to make full use of it.

The first necessity is, of course, to get a certain area cleared of inhabitants, cattle, etc. By judicious selection of your locality no hardship is incurred, and the civil authorities are always most obliging in the matter. At these manœuvres every officer, non-commissioned officer and man has a small canvas target stitched on to two thin sticks, rolled up, and carried like a semaphore flag. The troops may be divided into two equal and opposing forces, or one side may consist of a target party only, the main idea being that a particular tract of country has to be cleared of an enemy. For this purpose one force, say (A), advances at a given hour to ascertain the whereabouts of its opponent and drive him back. As soon as (A) is seen to expose itself at all, it is "held up" by the other force (B) sounding a long "G." Every individual of the advancing force (A) is then bound to put his target in the ground wherever he is, and double to a flank for cover. When the officer commanding (A) sees that all his men are safe he orders the "continue" bugle to be sounded, and (B), after repeating the call, comes into action at once. The procedure after this can be varied at the discretion of the officer commanding the troops, who acts as Chief Umpire. By selecting some call to denote *his* special bugle, preceded by one "G" for (A) force and two "G's" for (B), he can with ease control the whole manœuvre from some central position, and direct either side to halt or advance, come into action or retire, as he thinks fit. Should the forces be more or less equal in strength, advances may be made by each side alternately, but everything depends a great deal on the nature of the country over which one is operating.

The accompanying sketch, done for me by a brother officer, shows an ideal tract of country close to Almora, utilised for one of these manœuvres lately. On this occasion each side consisted of a double company. At 6 a.m. (A) advanced from a position on the spur west of Katiari village (shown *near* Fig. 6), and was "held up" by (B) at Fig. 4, the targets being placed as shown at Fig. 5, for nearer the crest line would have been dangerous for villages lying north. (A) then took refuge for safety, as shown at Fig. 6, and (B) came into action, from Fig. 1, at a range of 1,900 yards. On the "stand fast" being sounded (A) emerged, targets were checked (19 were hit), and the casualties proceeded to the dressing station. (B) meanwhile stealthily advanced, but was "held up" by (A) at Fig 3, where the targets were put up, and whence refuge was taken, as shown at Fig. 2. (A) then opened fire.

But I am not describing any more of the manœuvre, as I have said sufficient to illustrate the method of conducting it. To avoid confusion, the scouts are not shown, nor are the targets depicted in as scattered and realistic a manner as was actually the case.

The instruction to be gained in scouting, in judging distance, and in fire discipline is quite incalculable, and the practice in initiative, in commanding units, and in control of fire is most valuable. A very dis-

tinguished general officer in India wrote of a similar manœuvre he witnessed here as being "The best form of musketry training for war which he had ever seen, but the ground must be suitable."

Curiously enough, I was shown not long ago some suggestions by Brigadier-General J. S. S. Barker, R.A., which I have his permission to allude to. These proposals provided for ball-firing by opposing forces consisting of the three arms, and necessitating the clearance of a somewhat large area of country, say nine miles by three. One force, after entrenching itself in some suitable position and putting out targets, takes cover to a flank, when the other force, controlled largely by an Umpire Staff, advances to the attack, which it carries to a conclusion. The Umpires make casualties control the fire, and order targets to be laid down by units unduly exposed, etc. When this phase of the operations is finished and the hits are recorded, it will probably be found that a good day's work has been accomplished; so on the following day, the force that was acting on the defensive carries out an attack on the original position of its assailants, or on the targets dropped by them under the Umpires' orders. After this the respective merit of the two forces is compared and a decision arrived at. Other conditions being fairly equal, the percentage of hits to rounds fired receives first consideration.

General Barker's scheme assists one vastly in not only varying the manœuvre I have alluded to as performed regularly here in different localities, but also in accentuating certain important details. Three points occur to me at once: Firstly, the competition aroused, for the operations constitute a kind of match; then, the free use of Umpires, which we had not taken full advantage of; and, thirdly, the saving of delay by running the attack right through. As a preliminary training for small bodies of infantry, the idea is quite invaluable, and might be made preparatory to the more difficult problem of contending forces tactically employed with ball ammunition, and possibly approaching nearer to one another at every move. As regards the engagement of the three arms in any similar manœuvre, General Barker's is probably the most realistic scheme practicable, for with larger forces than a few companies the other plan would be more dangerous, more difficult to work, and would require the most ideal country.

PAX VEL BELLUM.

Almora, India,

NAVAL AND MILITARY CALENDAR.

JULY, 1906.

2nd (M.) Colonel Barker's column killed about 600 of the rebel Zulus near Nordsberg, South Africa.

3rd (T.) 350 rebel Zulus killed as the result of combined operations by Colonels M'Kenzie, Barker, Leuchars, and Wools-Sampson.

4th (W.) H.M.S. "Implacable" arrived at Devonport.

8th (S.) News received that the Natal troops had defeated a body of rebel Zulus in the Umvoti District, killing 547.

9th (M.) H.M.S. "Implacable" paid off at Devonport.

10th (T.) H.M.S. "Implacable" recommissioned at Devonport for the Mediterranean.

12th (Th.) The Secretary of State for War announced his proposals for the re-organisation of the Army, including a reduction of the Regulars by 20,000 men.

13th (F.) Lord Ellenborough asked the Government to introduce a Bill dealing with the question of the dissemination of news in time of war.
15th (S.) War was declared between Honduras and Guatemala.
16th (M.) H.M.S. "Andromeda" paid off at Portsmouth.
" " H.M.S. "Swiftsure" paid off at Chatham.
17th (T.) H.M.S. "Swiftsure" recommissioned at Chatham for Channel Fleet.
18th (W.) H.M.S. "Implacable" left Plymouth for the Mediterranean.
21st (Sat.) Major Dreyfus of the French Artillery was decorated with the Cross of the Legion of Honour.
25th (W.) H.M.S. "Terrible" left Plymouth with relief crews for China.
28th Sat.) H.M. the King inspected and bade farewell to the 3rd Bn. Scots Guards, at Buckingham Palace, prior to its disbandment.

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A history of tactics may appear at first sight to be a somewhat ambitious title, which, however, the author has done much to justify. Captain Johnstone has taken the two branches—the one dealing merely with matters of drill, discipline, and training, the other more usually known as Grand Tactics and which borders upon the domain of strategy—and has dealt with the two historically. His treatment of his wide subject is enriched and illustrated by many valuable examples taken from the wars of all the nations and of most of the Continents. The sources from which his thirty-seven maps or plans are drawn are very wide, and the maps themselves are naturally of varying excellence; but in each of them the author has endeavoured to avoid a fruitful cause of confusion, and has arranged his troops upon the particular map at one moment only, and at that best illustrating the subject discussed.

Captain Johnstone's History practically goes no further back than to the days of the tactics of the Great Frederick, but it is continued through the warring ages up to the present day, not excluding a thoughtful consideration of the development of tactics as evolved in the war now happily come to an end. To British soldiers the chapters on "Small Wars," on "Desert Warfare," and on "The Boer War" will be specially

welcome, and in the last-mentioned campaign in particular the author has some very just remarks on the general value of Continental criticism, based entirely upon knowledge gained after the event and upon the study of European methods applied to conditions of which the critic can have no conception. A comprehensive history of tactics would be a monumental work, but the author has managed, within reasonable compass, to produce a history of much value, wherein the student may readily trace the various stages of the development of the methods of the fight, from the days of Hohenfriedburg to those of Liao-Yang.

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This small volume, of the same size and appearance of our official drill books, is solely devoted to work in the field in war and in training for war, and should prove of use to those going on active service, and possibly to those who have already served with troops in the field. The book is a distinct advance on others of a similar character, and has excellent chapters on "Horsemastership," "Demolitions," and on "Finding and Marching on Bearings by Day and Night." It is printed on India paper, is of convenient size, and the information contained in it is clearly expressed, and is of a most practical character.

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